NAVAER 17-15C-514

Handbook
Operation and Service
with
Illustrated Parts Breakdown

S-2 LINE ANALYZER

PART NO.	NAVY STOCK NO.
1000548	R88T0951-400-000

(Sperry)

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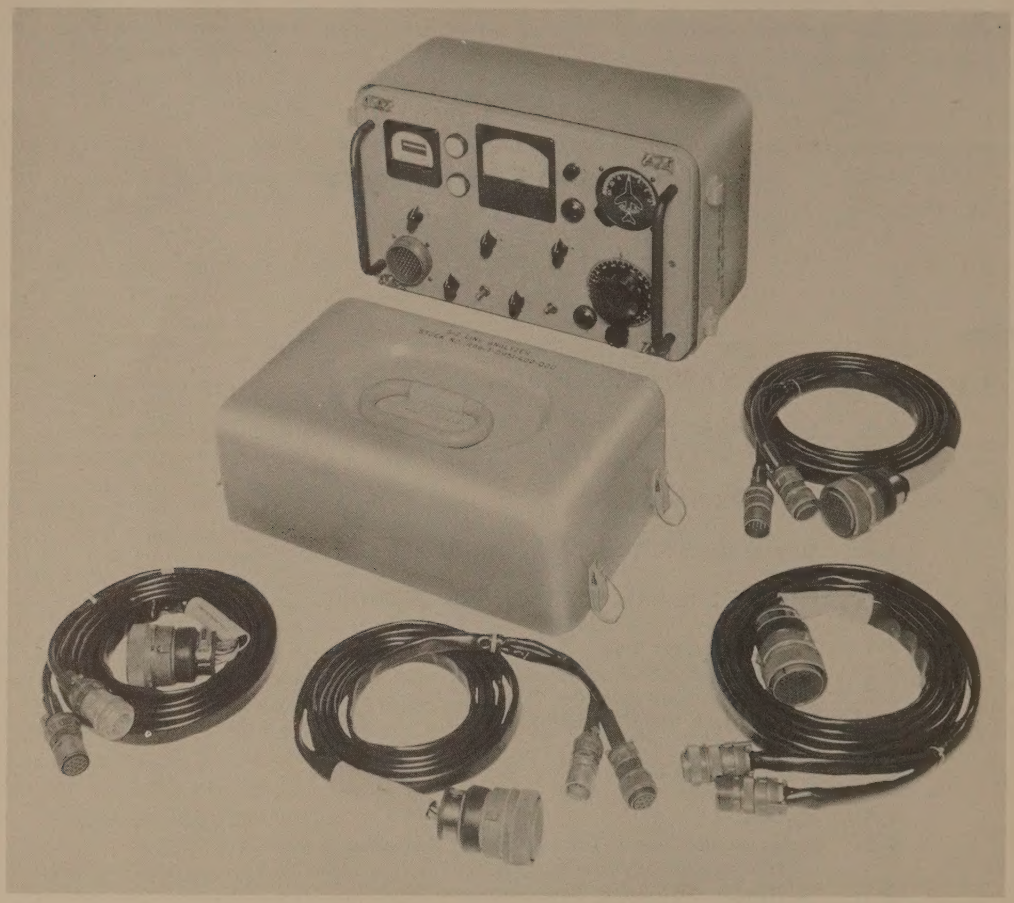


Figure 1-1. S-2 Line Analyzer
(Navy Stock No. R88T0951-400-000)

Figure 1-2. Front Panel of Line Analyzer

SECTION I
INTRODUCTION AND DESCRIPTION

1-1. INTRODUCTION.

1-2. PURPOSE AND SCOPE OF HANDBOOK. This handbook contains the general description, principles of operation and data required for operation and field maintenance of the S-2 (C-4N) Gyrosyn Compass Line Analyzer, Part No. 1000548 (Navy Stock No. R88T0951-400-000). (See figure 1-1.) The Gyrosyn Compass Line Analyzer is manufactured by the Sperry Gyroscope Company Division of Sperry Rand Corporation, Great Neck, N.Y.

1-3. PURPOSE OF EQUIPMENT. The Gyrosyn Compass Line Analyzer, by utilizing various cable arrangements and switch settings, is capable of performing tests on the Gyrosyn Compass Amplifier, Directional Gyro Control, Controller Repeater, and the Repeater Amplifier while these units are installed in the aircraft.

1-4. DESCRIPTION.

1-5. GENERAL CHARACTERISTICS.

1-6. The Gyrosyn Compass Line Analyzer is housed in a cabinet which is 19-1/2 inches in length, 13-1/2 inches in height and 12 inches in depth. The weight is 40 pounds. The Line Analyzer is equipped with four "fork-like" cables which are used to connect various compass components. No fuses are required in the Line Analyzer. The fuses within the compass component being tested serve as safety devices for the Line Analyzer.

1-7. PRINCIPLES OF OPERATION.

1-8. GENERAL. The Gyrosyn Compass Line Analyzer, Part No. 1000548, operates on a 115v ±5 percent, 400 cps, three-phase power source and 27.5v, ±5 percent d-c source. (See figure 1-2 and 1-3.) This power source is necessary to produce the voltages required to test the Gyrosyn Compass. The entire unit consists of a microammeter M2, frequency meter M1, power and phase indicators I1 and I2, control continuity indicator I3, thermal relay indicator I4 (relay used in cutting out fast slaving), an 800 cps signal generator, a synthetic signal source B1, a built-in repeater indicator I5, and complementary switches and circuits.

1-9. DETAILED.

1-10. METER M2. (4, figure 1-3). Meter M2 is a microammeter which, by switching various series and shunt precision resistors into the meter circuit, is made to measure voltages for various Gyrosyn Compass circuits. These associated precision resistors of meter M2 cause the meter pointer to coincide with the calibration on the meter face for all switch settings.

1-11. FREQUENCY METER M1 (1, figure 1-3). Frequency meter M1 is a vibrating reed-type meter which measures frequencies between 375 cps and 425 cps within an accuracy of ±0.5 percent. Meter M1 operates off a power supply of 115 volts.

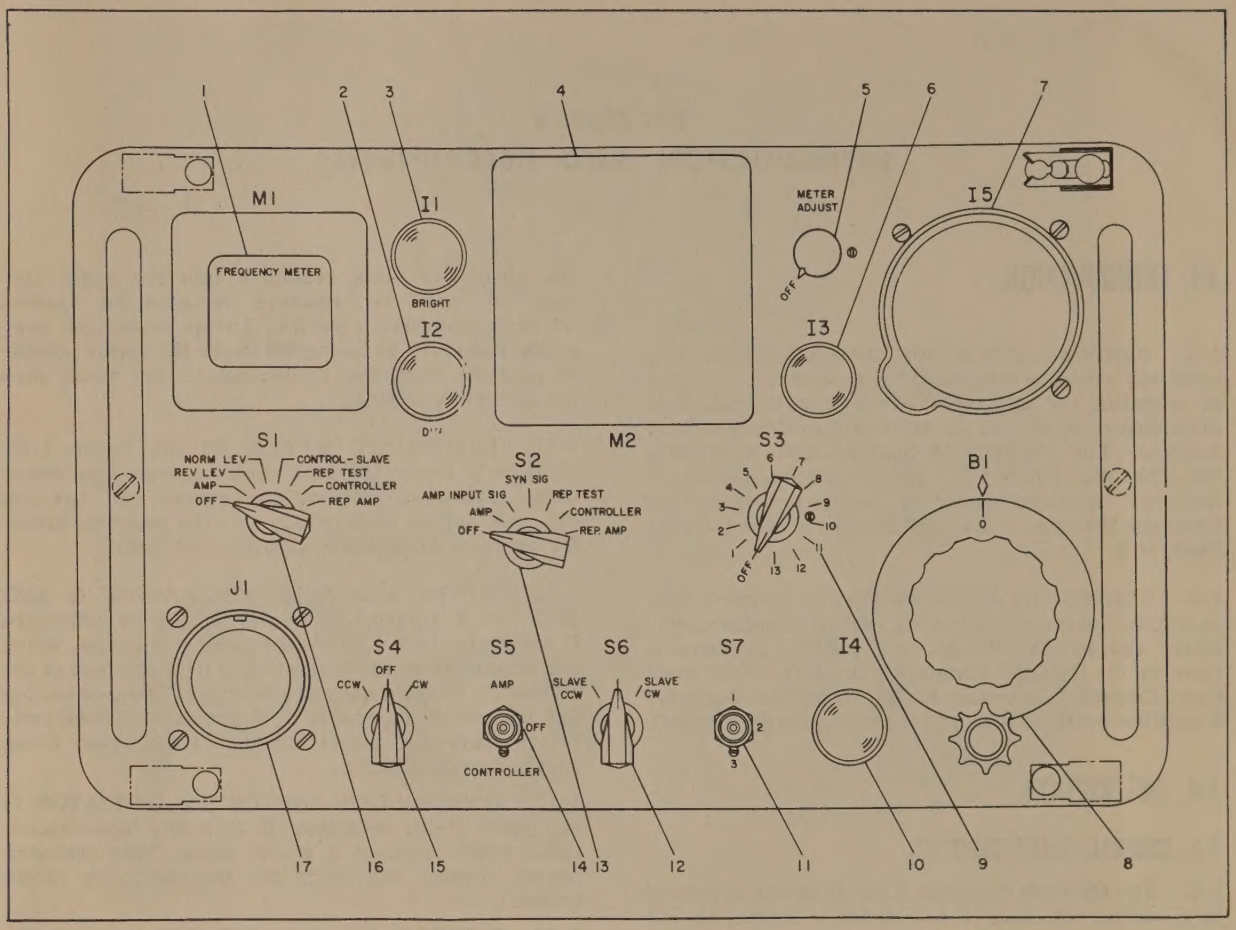
1-12. POWER AND PHASE INDICATORS I1 AND I2 (2 and 3, figure 1-3). Power and Phase Indicators I1 and I2 are both 120v-6w incandescent lamps, which are connected in the B-phase and C-phase legs of the airplane's power supply respectively. The A-phase leg has no indicator because it is grounded. These indicators show the phase rotation of the power being supplied to the system.

1-13. CONTROLLER CONTINUITY INDICATOR I3 (6, figure 1-3). Indicator I3 is a 28v incandescent lamp which utilizes a green mask. This indicator shows whether continuity for the controller exists or not.

1-14. THERMAL RELAY INDICATOR I4 (10, figure 1-3). Indicator I4 is a 120v-6w incandescent lamp which utilizes a red mask. Normally it is not lit. However, during the time (two to three minutes) the Gyrosyn Compass is being operated by fast slaving voltages, indicator I4 will be in the thermal relay "closed" circuit and will light.

1-15. AMPLIFIER INPUT SIGNAL SOURCE (figure 1-4). During many checks of the Gyrosyn Compass, the Flux Valve is disconnected, thus necessitating a built-in signal source of 800 cps. This signal source consists of a full-wave rectifier (CR1) and a tuned circuit (L1, C2) which is tuned to 800 cps. When 400 cps are applied to the selenium rectifier, a ripple frequency of 800 cps will result at the output. This 800 cps ripple frequency is applied to the tuned circuit (C2, L1) from which the 800 cps sine wave voltage, necessary as an amplifier input signal, is obtained.

1-16. SYNTHETIC SIGNAL SOURCE B1 (figure 1-3). The Gyrosyn Compass Line Analyzer has incorporated within its cabinet a means for synthetically reproducing the signal from the Gyrosyn Compass Flux Valve. An 800 cps signal (which is produced in the "800 cps Signal Generator") is placed across the rotor of B1. Through mutual induction, the signal is transmitted to the stator of B1. From this point on, the signal appears as though it is coming from a Flux



1 Frequency meter "M1"

2 Power and phase indicator "I1"

3 Power and phase indicator "I2"

4 Microammeter "M2"

5 "METER ADJUST"

6 Control continuity indicator "I3"

7 Repeater indicator "I5"

8 Synthetic signal source "B1"

9 Operation switch "S3"

10 Thermal relay indicator "I4"

11 Slaving voltages control toggle switch "S7"

12 Slaving voltages applicator switch "S6"

13 Operational switch "S2"

14 D-c switch "S5"

15 CCW or CW switch "S4"

16 Operational switch "S1"

17 Receptacle "J1"

Figure 1-3. Front Panel Drawing of Line Analyzer

Valve. By varying the position of the B1 dial setting through 360 degrees the position of the B1 "rotor" changes, thereby introducing a signal to the flux valve synchro.

1-17. REPEATER INDICATOR I5 (7, figure 1-3). The repeater indicator I5 is basically a synchro which is used to indicate the attitude of the gyro during certain checks. As the gyro is made to move in a clock-

wise direction or in a counterclockwise direction, the "gyro heading synchro" sends a signal voltage to indicator I5 which repeats the gyro heading. Also, the rotation of B1 sends a signal from the "gyro heading synchro" to the repeater I5.

1-18. CABLING. The cables used in conjunction with the Gyrosyn Compass Line Analyzer are all "fork-like" cables. Connection is made from the Gyrosyn Compass to the Line Analyzer by removing the cable to the Gyrosyn Compass and replacing it with the appropriate Line Analyzer cable. This cable effectively connects the Line Analyzer in series with the Gyrosyn Compass components.

1-19. ADDITIONAL EQUIPMENT REQUIRED.

1-20. The only additional equipment required is a stop watch.

SECTION II
SPECIAL SERVICE TOOLS

2-1. SPECIAL SERVICE TOOLS.

2-2. No special service tools are required to maintain the Gyrosyn Compass Line Analyzer in satisfactory operating condition. Any general shop tools required to maintain the Gyrosyn Compass Line Analyzer are listed in the section of this handbook in which their use is required.

SECTION III
PREPARATION FOR USE, STORAGE AND SHIPMENT

3-1. PREPARATION FOR USE.

3-2. UNPACKING. The following procedures should be followed in removing the Line Analyzer from the carton in which it was shipped:

a. After opening the carton, remove the wadding used to cushion the unit during shipment.

b. Remove and examine the humidity indicator. If the crystals are pink, the unit should be given a thorough inspection for deteriorization which results from excessive humidity. If the crystals are blue, only a visual inspection is necessary.

c. Remove the unit from the container and remove the desiccant.

d. Examine for damage which may have occurred during shipment.

e. The Line Analyzer is completely assembled and tested before shipment and no installation of parts or adjustments is necessary.

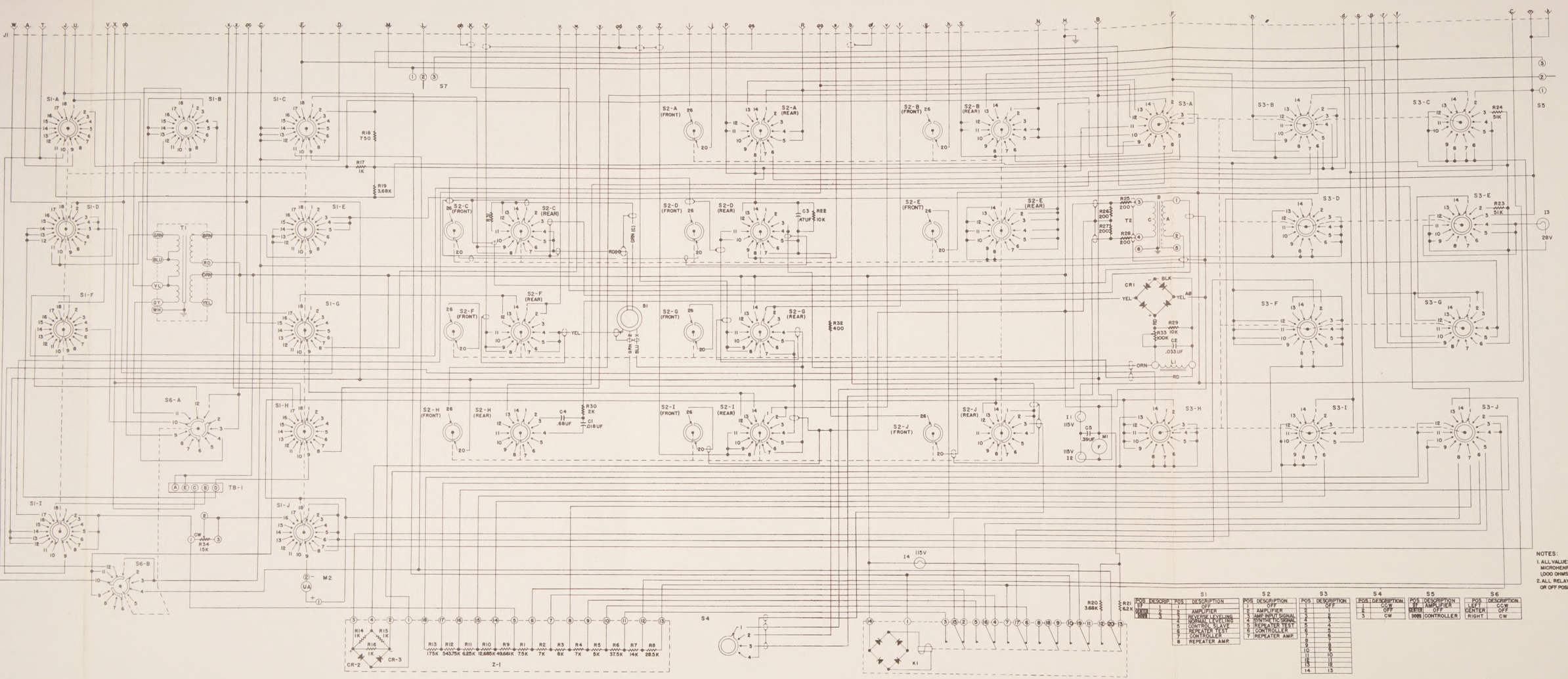
3-3. POWER AND SPACE REQUIREMENTS.

3-4. POWER. The power requirements for the Line Analyzer, when used within the S2 Compass System are as follows:

a. 115v ±5 percent ac, 400 ± 10 cps, 3 phase.

b. 27.5v ±5 percent dc.

3-5. SPACE. The dimensions of the unit are 19-1/2 x 11-1/2 x 9 inches.



S1

POS	DESCRIP
UP	1
CENTER	2
DOWN	3

POS	DESCRIPTION
1	OFF
2	AMPLIFIER
3	REVERSE LEVELING
4	NORMAL LEVELING
5	CONTROL SLAVE
6	REPEATER TEST
7	CONTROLLER
8	REPEATER AMP.

S2

POS	DESCRIPTION
1	OFF
2	AMPLIFIER
3	AMP. INPUT SIGNAL
4	SYNTHETIC SIGNAL
5	REPEATER TEST
6	CONTROLLER
7	REPEATER AMP.

S3

POS	DESCRIPTION
1	OFF
2	1
3	2
4	3
5	4
6	5
7	6
8	7
9	8
10	9
11	10
12	11
13	12
14	13

S4

POS	DESCRIPTION
1	CCW
2	OFF
3	CW

S5

POS	DESCRIPTION
UP	AMPLIFIER
CENTER	OFF
DOWN	CONTROLLER

S6

POS	DESCRIPTION
LEFT	CCW
CENTER	OFF
RIGHT	CW

Figure 1-4. Schematic Wiring Diagram of Line Analyzer

3-6. PREPARATION FOR STORAGE.

3-7. No special storage procedure is required. However, do not place the Analyzer so that anything rests on its switches or meters. Also it is recommended that a desiccant be placed in the container in which the unit is stored.

3-8. PREPARATION FOR SHIPMENT.

3-9. The following procedure is recommended for preparing the unit for shipment:

a. Clean all dirt and foreign matter from the exterior and interior of the unit.

b. Cover the J1 receptacle with a dust cap.

c. Place a desiccant in the box with the unit.

d. Surround the unit with cellulose wadding or a similar cushioning substance.

e. Lable the unit "FRAGILE".

SECTION IV
OPERATION INSTRUCTIONS

4-1. GENERAL.

4-2. This section contains general operating instructions for the use of the Gyrosyn Compass Line Analyzer, Sperry Part No. 1000548 (Navy Stock No. R88T0951-400-000), in testing the functioning of the Gyrosyn Compass System. By proper switch settings, the Line Analyzer is capable of supplying a simulated flux valve signal (800 cps) voltage to the Compass System or a 400 cps signal voltage to precess the Compass Gyro. In addition, the Line Analyzer is equipped with various meters, lamp indicators, and repeater indicators whose readings can be easily compared to the readings which would be obtained from properly operating equipment.

4-3. PURPOSE AND USE OF LINE ANALYZER SWITCHES, METERS AND CONTROLS.

4-4. The purpose and use of the Line Analyzer switches, meters, controls, etc. are covered in table 4-1. These components are shown in figure 1-2 and 1-3.

4-5. STARTING AND STOPPING PROCEDURES.

4-6. STARTING. Disconnect the Gyrosyn Compass cable in the aircraft and connect the appropriate Line Analyzer cables. Turn the aircraft or portable power on.

4-7. STOPPING. To stop the Line Analyzer, turn the aircraft or portable power off and disconnect the attached cables. It is then necessary to replace the Gyrosyn Compass cable.

4-8. TYPICAL OPERATING INSTRUCTIONS.

4-9. PRELIMINARY PROCEDURE.

4-10. Before performing any tests on a Gyrosyn Compass System using the Line Analyzer, check that the a-c and d-c power being supplied by the airplane or portable generator is off. Also, check that the Line Analyzer switches are in the following positions:

SWITCH	POSITION
"S1"	"OFF"
"S2"	"OFF"
"S3"	"OFF"
"S4"	"OFF"
"S5"	"OFF"
"S6"	Center
"S7"	"1"
"METER ADJUST"	"OFF"

4-11. AMPLIFIER TEST. Connect amplifier test cable T1775233 to Compass Amplifier and Line Analyzer Receptacle J1.

4-12. TYPICAL POWER SUPPLY CHECK.

a. Turn aircraft or portable generator a-c and d-c power on.

b. Check a-c power phase sequence by observing indicators "I1" and "I2". "I1" should be the brighter of the two.

TABLE 4-1

OPERATING CONTROLS AND INDICATORS

Control or Indicator	Figure 1-3 Index No.	Function
"M1"	1	Measures frequency of input power to Compass System.
"I2" and "I1"	2 and 3	Indicate phase rotation of three-phase power.
"M2"	4	Measures test voltages on a percentage basis.
"METER ADJUST"	5	Adjusts meter M2 pointer in zeroing during continuity check of Controller.
"I3"	6	Checks continuity of controller circuitry.
"I5"	7	Indicates the heading of the gyro during certain checks and also indicates the heading of "B1".
"B1"	8	Simulates the flux valve signal or heading transmitter.
"S3"	9	Operational Switch.
"I4"	10	Indicates whether or not a fast slaving voltage is being applied to the gyro.
"S7"	11	Controls fast and slow slaving voltages.
"S6"	12	Applies slaving voltages from transformer T1 to the gyro.
"S2"	13	Operational Switch.
"S5"	14	D-c switch.
"S4"	15	Sends either CW or CCW signals through compass amplifier during amplifier check.
"S1"	16	Operational Switch.
"J1"	17	Receptacle.

c. Check the frequency of the a-c power by observing frequency meter "M1". The reading on meter "M1" should be 400 ± 10 cps.

d. Turn switch "S1" to "AMP".

e. Turn switch "S3" to the positions listed below. Meter "M2" should read the values adjacent to the switch "S3" settings.

SWITCH POSITIONS "S3"	"M2"	DESCRIPTION
"1"	100 ± 5%	d-c power
"2"	100 ± 5%	B phase
"3"	100 ± 5%	C phase

4-13. TYPICAL SLAVING VOLTAGE CHECK FOR S-2 AMPLIFIER.

NOTE

Refer to paragraphs 4-15, 4-16, 4-17, and 4-18 for ComAirLand Amplifier.

a. Turn switch "S2" to "AMP INPUT SIG".

b. Turn switch "S3" to "7".

c. Turn switch "S5" to "AMP" and start stop watch. Indicator "I4" should light red, and remain lit for 2 to 3 minutes.

d. During the 2 to 3 minute period in which indicator "I4" is lit, turn switch "S4" to "CW" and then "CCW". Meter "M-2" should read 100 ± 15 percent (fast slaving control field voltage) for both the "CW" and "CCW" positions. When switch "S4" is in the "OFF" position, meter "M2" should read not more than 10 percent.

e. Turn switches "S3", "S4" and "S7" to the positions listed below. Meter "M2" should read the values adjacent to the switch settings.

SWITCH POSITIONS "S3"	"S4"	"S7"	"M2"	DESCRIPTION
"4"	"OFF"	"2"	100 ± 10%	Slow fixed field voltage
"4"	"OFF"	"3"	100 ± 10%	Fast fixed field voltage
"5"	"OFF"	"3"	100 ± 10%	Fast leveling control field voltage
"5"	"OFF"	"2"	100 ± 10%	Slow leveling control field voltage
"6"	"OFF"	"2"	100 ± 10%	Flux valve excitation
"7"	"CW" and "CCW"	"2"	100 ± 18%	Slow slaving control field voltage
"7"	"OFF"	"2"	not more than 5%	Shorted input signal

4-14. TYPICAL MANUAL SLAVING RELAY CHECK (for S-2 Amplifier only). Turn switches "S3" and "S7" to the positions listed below. Meter "M2" should read the values adjacent to the switch settings.

SWITCH POSITIONS "S3"	"S7"	"M2"	DESCRIPTION
"8"	"2"	100 ± 15%	Annunciator E
"8"	"3"	0	Annunciator E
"9"	"3"	0	Annunciator I
"9"	"2"	100 ± 15%	Annunicator I
"10"	"2"	0	Manual Slaving M
"10"	"3"	100 ± 15%	Manual Slaving M
"11"	"3"	100 ± 15%	Manual Slaving N
"11"	"2"	0	Manual Slaving N

a. Turn aircraft or portable generator a-c and d-c power off.

b. Return all switches to the positions noted in paragraph 4-10 and disconnect amplifier test cable T1775233.

c. Reconnect system amplifier cable to amplifier.

4-15. AMPLIFIER TEST FOR COMAIRLANT.

4-16. POWER SUPPLY CHECK. Same as in S-2 Amplifier.

4-17. TYPICAL FAST SLAVING VOLTAGE CHECK.

a. Turn switch "S2" to "AMP INPUT SIG".

b. Turn switch "S3" to "4".

c. Turn switch "S5" to "AMP" and place Controller toggle switch on the aircraft in "FREE GYRO". Then turn "SET HEADING" switch on the aircraft to "INC" and start the stop watch. Release Controller "SET HEADING" switch and return Controller toggle switch to "SLAVE GYRO" immediately.

d. Indicator "I4" should light red and remain lit for 2 to 3 minutes.

e. During the 2 to 3 minute period in which "I4" is lit turn switches "S3" and "S4" to the following positions and meter "M2" should read the values adjacent to the settings.

SWITCH POSITIONS "S3"	"S4"	"S7"	"M2"	DESCRIPTION
"4"	"OFF"	"1"	100 ± 10%	Fast fixed field voltage.
"5"	"OFF"	"1"	100 ± 10%	Fast leveling control field voltage.
"6"	"OFF"	"1"	100 ± 10%	Flux Valve excitation.
"7"	"CW" and "CCW"	"1"	100 ± 15%	Fast slave continuity field voltage.
"7"	"OFF"	"1"	Not more than 10% shorted input signal.	
"8"	"OFF"	"3"	0	Annunciator "E".
"9"	"OFF"	"3"	0	Annunciator "I".
"10"	"OFF"	"3"	100 ± 15%	Manual slaving M.
"11"	"OFF"	"3"	100 ± 15%	Manual slaving N.

f. Return switch "S3" to position "4" and switch "S7" to position "1".

4-18. SLOW SLAVING VOLTAGES. After indicator "I4" has gone out, place switches "S3" and "S4" in the following positions and meter "M2" should read the values adjacent to the switch settings.

SWITCH POSITIONS "S3"	"S4"	"S7"	"M2"	DESCRIPTION
"4"	"OFF"	"1"	100 ± 10%	Slow fixed field voltage.
"5"	"OFF"	"1"	100 ± 10%	Slow leveling control field voltage.
"6"	"OFF"	"1"	100 ± 10%	Flux Valve excitation.
"7"	"CW" and "CCW"	"1"	100 ± 18%	Slow slaving control field voltage.
"7"	"OFF"	"1"	Not more than 5% shorted Input Voltage.	
"8"	"OFF"	"1"	100 ± 15%	Annunciator "E".
"9"	"OFF"	"1"	100 ± 15%	Annunciator "I".
"10"	"OFF"	"1"	0 ± 15%	Manual slaving "M".
"11"	"OFF"	"1"	0 ± 15%	Manual slaving "N".

a. Turn aircraft or portable generator a-c and d-c power off.

b. Return all switches to the positions noted in paragraph 4-10 and disconnect amplifier test cable T1775233.

c. Reconnect system amplifier.

4-19. DIRECTIONAL GYRO CONTROL TEST.

a. Connect gyro control test cable T1775234 to the Gyro Control and to the Line Analyzer receptacle J1 (figure 1-4).

b. Turn aircraft or portable generator a-c and d-c power on.

c. Repeat the check in paragraph 4-12.

NOTE

There will be no indication on meter "M2" when switch "S3" is in position "1".

4-20. TYPICAL GYRO CONTROL LEVELING CHECK.

a. Turn switch "S1" to "NORM LEV" and switch "S6" to "SLAVE CW". Release switch "S6" at the end of one minute.

b. Turn switch "S1" to "REV LEV".

c. Turn switch "S6" to "SLAVE CCW". As soon as the gyro starts to move from the level position, time the motion with a stop watch until the indicator "I5" begins to move rapidly. When "I5" starts this rapid movement, release switch "S6" to the center position. The time clocked by the stopwatch should be no less than 40 seconds nor more than 150 seconds.

d. Turn switch S1 to "NORM LEV".

e. Turn switch "S6" to "SLAVE CW" and hold it in this position for three minutes.

4-21. TYPICAL GYRO SLAVING AND HEADING SYNCHRO CHECK.

a. Turn switch "S1" to "CONTROL-SLAVE".

b. Turn switch "S6" to "SLAVE CW" and hold it in this position. Indicator "I5" should rotate in a clockwise direction and show a decreased heading. The slaving rate should be 60 degrees per minute, minimum.

c. Turn switch "S6" to "SLAVE CCW" and hold it in this position. Indicator "I5" should rotate in a counterclockwise direction and show an increased heading. The slaving rate should be 60 degrees per minute, minimum.

4-22. TYPICAL FLUX VALVE SYNCHRO CHECK.

a. Turn switch "S2" to "SYN SIG".

b. Turn switch "S3" to position "7".

c. Set the synthetic signal source "B1" to zero.

d. Turn switch "S6" to "SLAVE CW" or "SLAVE CCW" until indicator "I5" reads "N" (north).

e. Turn switch "S6" to "SLAVE CCW" and release when meter "M2" reads 60 percent. When switch "S6" is released, meter "M2" will drop to approximately 50 percent and then meter "M2" and indicator "I5" will move in a decreasing direction toward null.

f. Turn dial "B1" to 90 degrees.

g. Turn switch "S6" to "SLAVE CCW" until meter "M2" reads zero. Indicator "I5" should repeat the "B1" dial setting to within ±3 degrees.

h. Repeat preceding steps f and g for 180 and 270 degrees.

4-23. TYPICAL REPEATER CHECK.

a. Turn switch "S1" to "REP TEST".

b. Turn switch "S2" to "REP TEST".

c. Turn the synthetic signal source "B1" in an increasing heading direction. The airplane's repeater under test should follow constantly (and without hesitation) the "B1" indication.

d. Repeat step c for a decreasing heading direction.

e. Turn aircraft or portable generator ac and dc power off.

f. Return all switches to the positions noted in paragraph 4-10 and disconnect Gyro Control test to cable T1775234. Reconnect system gyro control cable to Gyro Control.

4-24. CONTROLLER TEST. Connect Controller test cable T1775231 to the Controller and to the Line Analyzer J1. Turn aircraft or portable generator a-c and d-c power on.

NOTE

During the test of the Controller, the a-c power phase indicator I1 and I2 (figure 1-3) remain unlit due to the absence of a-c power in the Controller.

4-25. TYPICAL CONTROLLER CHECK.

a. Turn switch "S1" to "CONTROLLER".

b. Turn switch "S2" to "CONTROLLER".

c. Turn switch "S5" to "CONTROLLER".

d. Place Controller toggle switch in "FREE GYRO" position.

e. Turn switch "S3" to position "1".

f. Turn "SET HEADING" switch on the Controller to "INC" and then "DEC". The annunciator pointer should deflect to the left within one-sixteenth of full scale.

g. Turn switch "S3" to position "2" and repeat step f. The annunciator should deflect to the right to within one-sixteenth of full scale.

h. Turn switch "S3" to position "3".

i. With Controller toggle switch in "FREE GYRO", the Controller Continuity Indicator "I3" should not light.

j. Turn the Controller's "SET HEADING" switch to "INC" and then to "DEC". In either of these positions "I3" should light.

k. Turn the Controller's toggle switch to "SLAVED GYRO". The Controller Continuity Indicator "I3" should light.

l. Turn switch "S3" to position "4". Indicator "I3" should go out. "I3" shall light when "SET HEADING" switch is turned to "INC" and "DEC".

m. Turn switch "S3" to position "5".

n. Rotate the Line Analyzer "METER ADJUST" knob until meter "M2" reads 100 percent.

o. Turn switch "S3" to position "6". Meter "M2" should read 67.5 ± 5 percent.

p. Turn the Controller's "SET HEADING" switch to "DEC". Line Analyzer Meter "M2" should read 100 ± 12 percent.

q. Turn the Controller's "SET HEADING" switch to "INC". Line Analyzer Meter "M2" should read zero.

r. Turn switch "S3" to position "7". Meter "M2" should read 67.5 ± 5 percent.

s. Turn the Controller's "SET HEADING" switch to "INC". Meter "M2" should read 100 ± 12 percent.

t. Turn Controller's "SET HEADING" switch to "DEC". Meter "M2" should read zero.

u. Turn switch "S3" to position "8". Meter "M2" should read 81.5 ± 5 percent.

v. Turn the Controller's "SET HEADING" switch to "INC" and then to "DEC" and observe meter "M2". Meter "M2" should not be affected.

w. Turn switch "S3" to position "9". Meter "M2" should read 27 ± 5 percent.

x. Turn switch "S3" to position "10".

y. Place the Controller's toggle switch in the "FREE GYRO" position.

z. Turn Controller's "SET HEADING" switch to "INC" and then to "DEC". The Controller Continuity Indicator "I3" should light when the "SET HEADING" switch is in either position.

aa. Turn the Controller's toggle switch to "SLAVED GYRO".

ab. Turn the Controller's "SET HEADING" switch to each of its three positions. Controller continuity indicator "I3" should not light.

ac. Turn switch "S3" to position "11". Meter "M2" should read 60 ± 10 percent. Turning "SET HEADING" switch to "INC" and "DEC" shall have no effect on the reading.

ad. Turn aircraft or portable generator a-c and d-c power off.

ae. Return all switches to the positions noted in paragraph 4-10 and disconnect Controller test cable T1775231.

af. Reconnect system.

4-26. REPEATER AMPLIFIER TEST. Connect Repeater Amplifer test cable T17755232 to the Repeater Amplifer and to the Line Analyzer receptacle J1. Turn aircraft or portable a-c and d-c power on.

NOTE

Only I2 indicator will light. Light will be bright, not dim, as indicated on panel.

4-27. TYPICAL REPEATER AMPLIFER CHECK.

a. Turn switch "S1" to "REP AMP".

b. Turn switch "S2" to "REP AMP".

c. Turns switch "S3" to position "12". Meter "M2" should read 100 ± 10 percent.

d. Turn the synthetic signal source "B1" in an increasing heading direction. The Line Analyzer Repeater Indicator "I5" should follow (without hesitation) and agree with the heading on "B1" within ±three degrees.

e. Repeat preceding step d for a decreasing heading.

f. Turn aircraft or portable generator a-c and d-c power off.

g. Return all switches to the position noted in paragraph 4-10 and disconnect Repeater Amplifier test cable.

h. Reconnect system Repeater Amplifer cable to Repeater Amplifier.

SECTION V
PERIODIC INSPECTION AND MAINTENANCE

5-1. PERIODIC INSPECTION.

5-2. Because the Line Analyzer has few moving parts and no tubes, a periodic inspection schedule is not necessary. However, it is recommended that the following before-use inspection be performed;

5-3. BEFORE-USE INSPECTION. Before using the Line Analyzer, 1000548, it should be checked as follows:

a. Visually check to see that all controls and indicators are not broken or damaged in any way.

b. Check the connectors of the cables for loose pins, socket insulators and loose terminal connections.

c. Check panel switches for freedom of rotation.

d. Check to see that meter "M2" is zeroed.

5-4. MAINTENANCE.

5-5. No periodic maintenance is necessary. If, however, faults are found during the inspection, they should be immediately repaired. As an aid to the repairman, a troubleshooting chart (table 6-1), a schematic wiring diagram (figure 1-4), test cable wiring diagram (figure 5-1) and exploded views (Section IX, figures 2 and 3) are provided.

5-6. CLEANING.

5-7. Remove any accumulated dirt or dust from the interior of the unit with low-pressure compressed air and then wipe down with a damp cloth, if necessary.

5-8. LUBRICATION.

5-9. No lubrication is necessary.

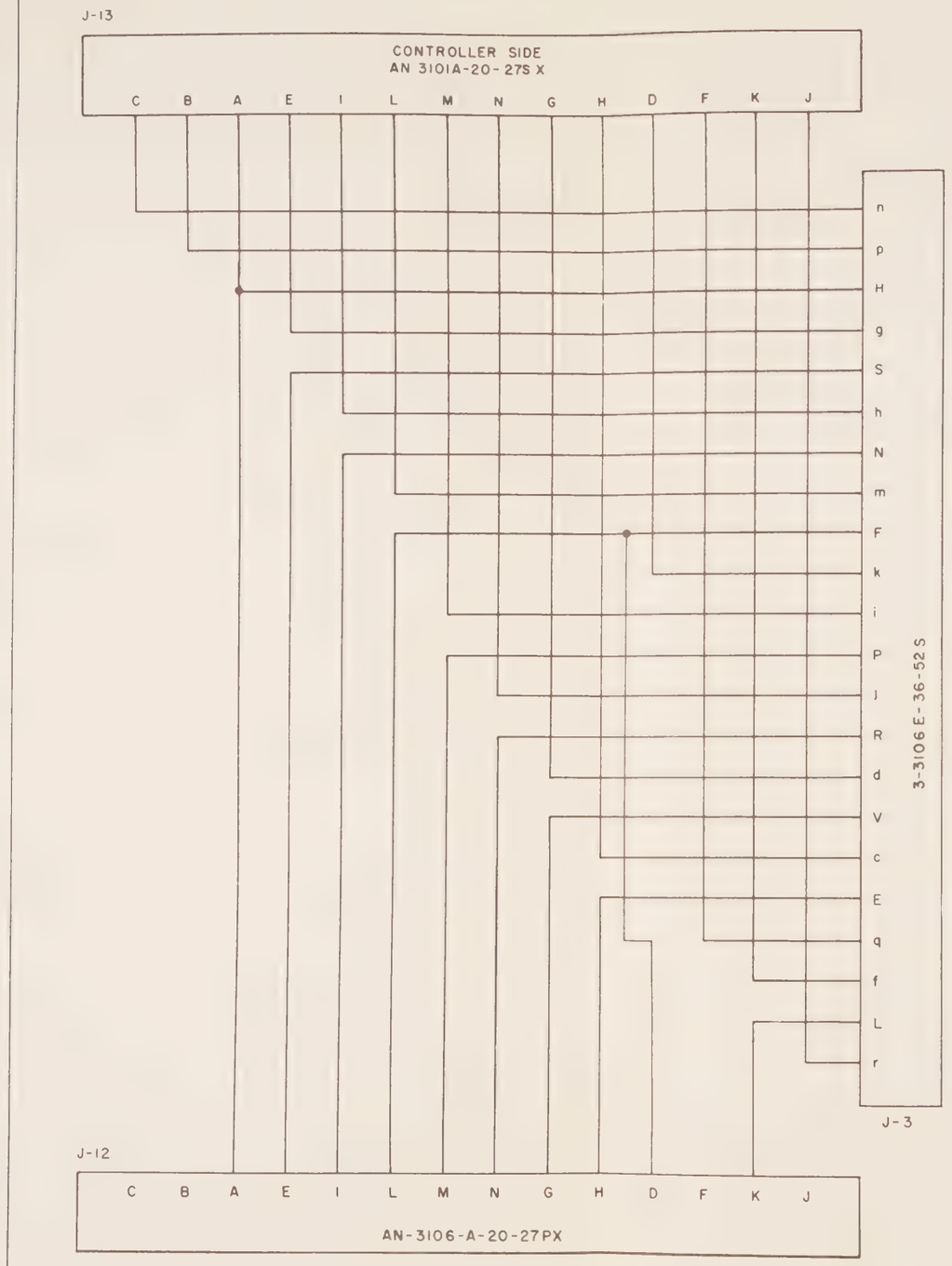
SECTION VI
TROUBLESHOOTING

6-1. GENERAL.

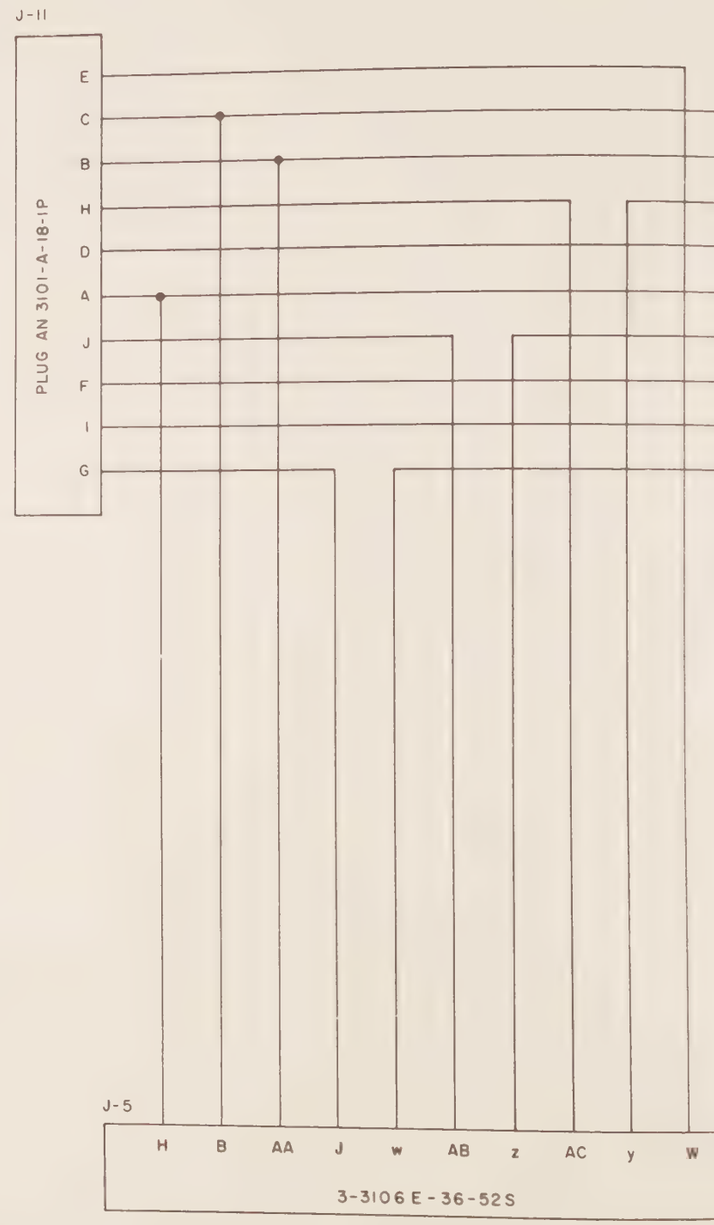
6-2. Many failures and malfunctions of the Line Analyzer may be traced to relatively simple causes such as blown fuses, broken wires or poor connections. Check these trouble sources before making more involved investigations. Make all checks systematically because haphazard checking wastes time and may cause further damage.

6-3. TROUBLESHOOTING CHART.

6-4. The following troubleshooting chart (table 6-1) is afforded to help isolate Line Analyzer trouble "causes" and "remedies". The troubleshooter should bear in mind that troubles which are not listed as "probable" may also occur and hence should utilize logical trouble-shooting procedures after checking all of the listed probable causes.

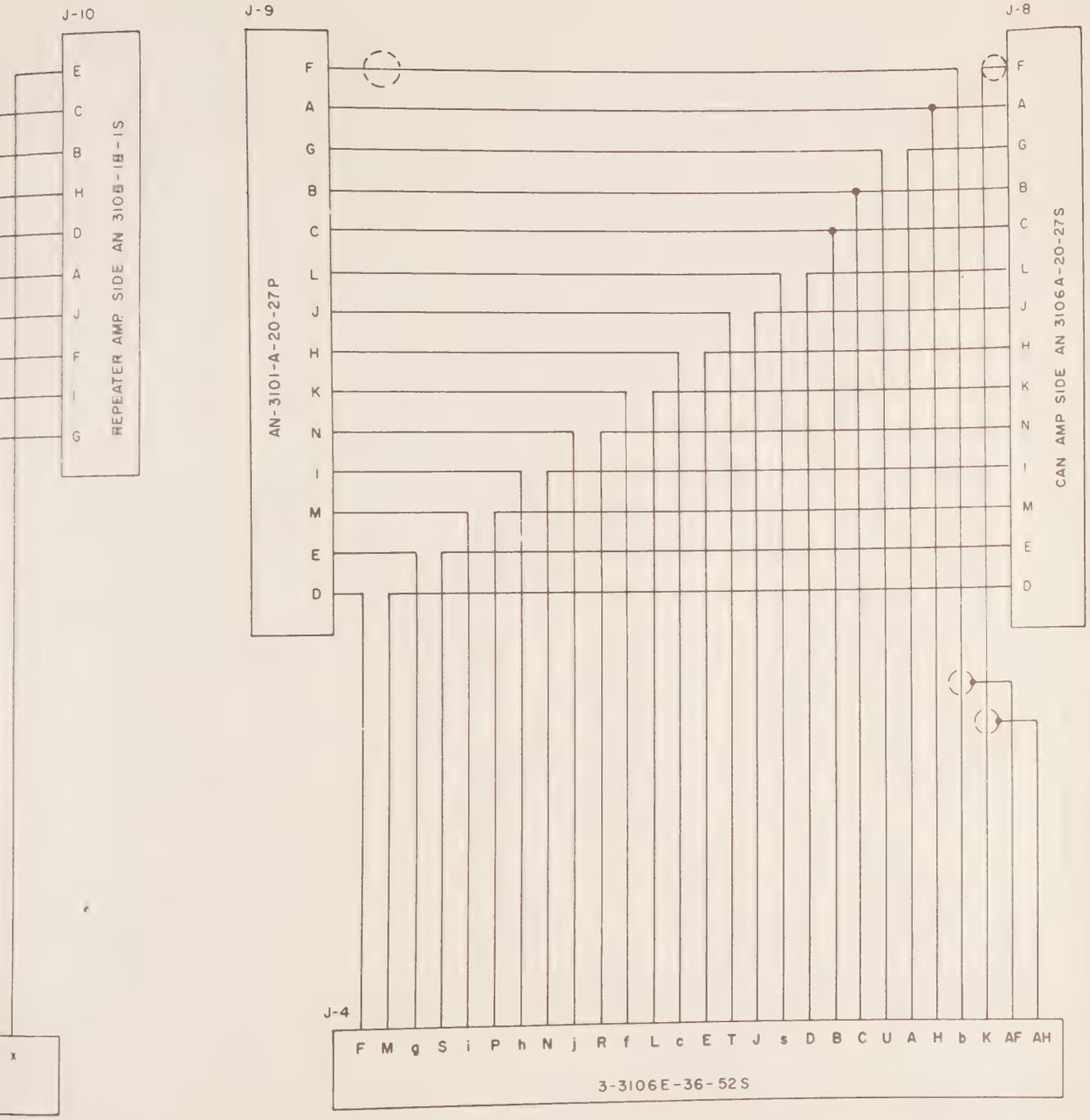

J-13
CONTROLLER SIDE
AN 3101A-20-27S X
C B A E I L M N G H D F K J
n p H g S h N m F k i p l R d V c E q f L r
3-3106E-36-52S
J-3
J-12
C B A E I L M N G H D F K J
AN-3106-A-20-27PX

CONTROLLER TEST CABLE T1775231

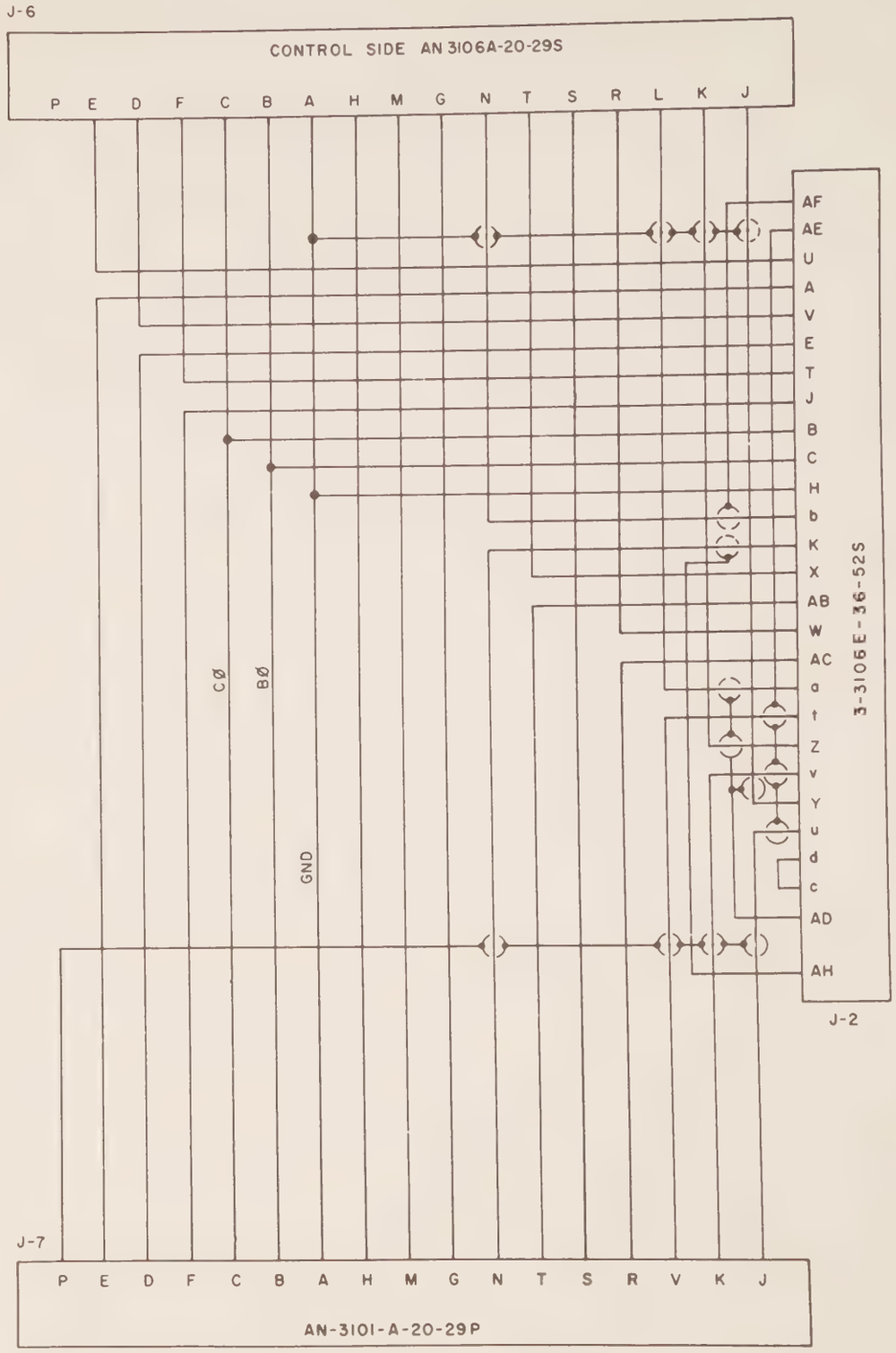


REPEATER AMPLIFIER TEST CABLE T-1775232

Figure 5-1. Wiring Diagram of Cable Assemblies


J-10
REPEATER AMP SIDE AN 3106-18-1S
E C B H D A J F I G
J-9
AN-3101-A-20-27P
F A G B C L J H K N I M E D
J-8
CAN AMP SIDE AN 3106A-20-27S
F A G B C L J H K N I M E D
J-4
F M g S i P h N j R f L c E T J s D B C U A H b K AF AH
3-3106E-36-52S

AMPLIFIER TEST CABLE T 1775233


J-6
CONTROL SIDE AN 3106A-20-29S
P E D F C B A H M G N T S R L K J
CØ
BØ
GND
AF AE U A V E T J B C H b K X AB W AC a t Z v Y u d c AD AH
3-3106E-36-52S
J-2
J-7
P E D F C B A H M G N T S R V K J
AN-3101-A-20-29P

GYRO CONTROL TEST CABLE T 1775234

TABLE 6-1

TROUBLESHOOTING CHART

TROUBLE	PROBABLE CAUSE	REMEDY
No reading on Frequency Meter "M1"	1. Meter inoperative 2. Open lead to meter 3. No a-c power	1. Replace meter. 2. Repair lead. 3. Check power to Analyzer. If none, check fuse.
Indicator "I1" fails to light.	1. Lamp inoperative 2. Open lead to light 3. No a-c power	1. Replace lamp. 2. Repair lead. 3. Check power to Analyzer. If none, check fuse.
Indicator "I2" fails to light	1. Lamp inoperative 2. Open lead to light 3. No a-c power	1. Replace lamp. 2. Repair lead. 3. Check power to Analyzer. If none, check fuse.
No reading on microammeter "M2" for any setting	1. Meter inoperative 2. No power 3. Open lead to meter	1. Replace meter. 2. Check power to analyzer. If none, check fuse. 3. Check meter circuit. (See figure 1-4.)
"METER ADJUST"	1. Open lead to variable resistor 2. No d-c power	1. Check circuit according to figure 1-4. 2. Check d-c power to analyzer. If none, check d-c line fuse.
Indicator "I3" fails to light	1. Lamp inoperative 2. Open lead to lamp	1. Replace lamp. 2. Check circuit. (See figure 1-4.)
Indicator "I5" fails to operate during the flux valve synchro check and the repeater amplifier check	1. No excitation voltage 2. No input voltage 3. Open rotor	1. Check to see that there is no power failure which would result in the loss of excitation voltage for "I5". Also, check to see that there are no open leads. 2. Check "B1" ouput signal. 3. Check rotor continuity.
Synthetic signal source "B1" inoperative	1. No excitation voltage 2. Open rotor	1. Check to see that there is no power failure which would result in the loss of excitation voltage. Also check to see that there are no open leads. 2. Check rotor continuity.
Indicator "I4" fails to light during the period when gyro is operated by fast slaving voltages	1. Lamp inoperative 2. Open lead to light 3. No a-c power	1. Replace lamp. 2. Check lamp circuit. (See figure 1-4.) 3. Check power to Analyzer; if none, check fuse.

6-5. REMOVAL AND REPLACEMENT PROCEDURES.

NOTE

All references to figure callouts in the removal and replacement procedures will be found in Section IX, "GROUP ASSEMBLY PARTS LIST".

6-6. GENERAL. The following procedures are given to facilitate removal and replacement of defective components. See Table 6-2 for general shop tools.

CAUTION

Label all unsoldered leads to insure correct connection during reassembly.

TABLE 6-2

GENERAL SHOP TOOLS

NOMENCLATURE	DESCRIPTION OR USE
Vacuum-tube voltmeter (capable of measuring d-c voltage and resistance)	Make continuity and resistance checks. Make voltage checks of Analyzer circuit.
Standard frequency measuring device such as an EPUT meter, Stroboscope or equivalent.	Check Frequency of Analyzer tuned circuit and input power.
Standard Audio Signal Generator	Supply 800-cps signal for use during calibration.

6-7. REMOVAL OF PANEL AND CHASSIS ASSEMBLY. Proceed as follows:

a. Release the four catches located in the four corners of the panel assembly.

b. Remove the panel and chassis assembly by sliding it from within the case.

c. Replace in the reverse order of removal.

6-8. REMOVAL OF METER M1. Proceed as follows:

a. Unsolder all leads to meter "M1".

b. Remove the nuts (50, figure 3) and washers (51) located at the rear of the meter.

c. Remove meter.

d. Replace in the reverse order of removal.

6-9. REMOVAL OF LAMP-TYPE INDICATORS. Proceed as follows:

NOTE

All lamp-type indicators are removed in the same manner, therefore, only the removal and replacement procedure of Indicator I1 will be described.

a. Unscrew mask from Indicator "I1" (9, figure 3).

b. Remove bulb (8), using Lamp Installing Tool mounted in the cover, by depressing and turning 90 degrees counterclockwise.

c. If the lamp assembly needs replacing, remove all leads from the rear of the Indicator and remove the nut on the panel.

d. Remove the lamp assembly.

e. Replace in the reverse order of removal.

6-10. REMOVAL AND REPLACEMENT OF METER M2. Proceed as follows:

a. Unsolder all leads to meter "M2".

b. Loosen the four screws on the meter brackets which screw against the rear side of the panel.

c. Remove the brackets.

d. Remove meter "M2".

e. Replace in the reverse order of removal.

6-11. REMOVAL AND REPLACEMENT OF METER ADJUST. Proceed as follows:

a. Unsolder all leads to "METER ADJUST" potentiometer.

b. Remove knob (10, figure 10).

c. Remove nut located behind the meter adjust knob.

d. Remove "METER ADJUST" potentiometer.

e. Replace in the reverse order of removal.

6-12. REMOVAL AND REPLACEMENT OF INDICATOR I5. Proceed as follows:

a. Disconnect connector to indicator "I5".

b. Remove the four screws (30, figure 3) located on the panel.

c. Remove indicator "I5".

d. Replace in the reverse order of removal.

6-13. REMOVAL AND REPLACEMENT OF SYNTHETIC SIGNAL SOURCE B1. Proceed as follows:

a. Remove all leads from the rear of "B1" indicator.

b. Loosen the screw in the "B1" indicator knob (22, figure 3).

c. Remove the knob (22), thereby removing the attached dial and blank plate.

d. Remove the three nuts (32), washers (33) and screws (35).

e. Remove the mounting ring (34).

f. Remove the "B1" indicator.

g. Replace in the reverse order of removal and recalibrate as described in paragraph 7-6.

6-14. REMOVAL AND REPLACEMENT OF WAFER SWITCHES. Proceed as follows:

NOTE

All wafer switches are removed in the same manner, therefore, only the removal and replacement of switch "S1" will be described.

a. Unsolder all leads to switch"S1".

b. Loosen the screw in the "S1" switch knob (36, figure 3).

c. Remove the knob.

d. Remove the nut on the panel side of switch "S1".

e. Remove the two nuts (37), and washers (38) which hold switch "S1" to the supporting bracket (108).

f. Remove switch "S1".

g. Replace in the reverse order of removal.

6-15. REMOVAL AND REPLACEMENT OF TOGGLE SWITCHES. Proceed as follows:

NOTE

All toggle switches are removed in the same manner, therefore, only the removal and replacement of switch "S5" will be described.

a. Unsolder all leads to switch "S5" (26, figure 3).

b. Remove nut on the panel side of switch "S5".

c. Remove switch "S5".

d. Replace in the reverse order of removal.

6-16. REMOVAL AND REPLACEMENT OF RECEPTACLE J1. Proceed as follows:

a. Unsolder all leads to receptacle "J1" (1, figure 3).

b. Remove the four nuts (2) and washers (3) from the screws (4).

c. Remove "J1".

d. Replace in the reverse order of removal.

6-17. REMOVAL AND REPLACEMENT OF ELECTRICAL ELEMENTS. Proceed as follows:

NOTE

The following is a general procedure for the removal and replacement of electrical elements such as transformers, coils, resistor boards, etc.

a. Unsolder all leads to the electrical element.

b. Remove all mechanical supports such as bolts, brackets, clamps, etc.

c. Remove the electrical element.

d. Replace in the reverse order of disassembly.

SECTION VII
CALIBRATION

7-1. GENERAL.

7-2. The calibration procedures outlined in this section should be performed if it is suspected that the Line Analyzer is malfunctioning because of calibration.

7-3. TEST EQUIPMENT REQUIRED.

7-4. In addition to the shop tools called for in table 6-2, a standard cathode-ray oscilloscope is required.

7-5. CALIBRATION CHECKS.

7-6. CALIBRATION OF SYNTHETIC SIGNAL SOURCE B1. The synthetic signal source "B1" is adjusted to obtain a zero null as follows:

a. Connect the green rotor lead and green stator lead together.

b. Connect the blue and yellow stator leads together.

c. Connect a vtvm across the red and yellow leads.

d. Apply 115v, 400 ± 5 cps, across the red and green rotor leads.

e. Rotate the rotor of indicator B1 to the position which gives the maximum vtvm reading.

f. Disconnect short between the blue and yellow stator leads.

g. Reconnect the vtvm across the yellow and blue stator leads.

h. Rotate rotor until nearest minimum (null) voltage is obtained on vtvm.

i. Lock the rotor in this position with the pointer indicating zero.

7-7. CALIBRATION OF 800-CYCLE SIGNAL GENERATOR. Proceed as follows:

a. Turn all power to the Line Analyzer off.

b. Turn switches "S1", "S2" and "S3" to "OFF".

c. Disconnect the orange lead to variable resistor R33.

d. Connect an external 800 cps signal source across the horizontal plates of an oscilloscope. (See figure 7-1).

e. Connect the ground lead from the signal source to one side of the tuned circuit (L1, C2).

f. Connect a lead from the opposite side of the tuned circuit to the ungrounded vertical plate of the oscilloscope.

g. Connect a 50K-1/4 watt resistor between the ungrounded horizontal and vertical plates of the oscilloscope.

h. Connect a vtvm across the vertical plates and ground.

i. Turn switch "S2" to "AMP INPUT SIG".

j. Adjust 800 cps source to 5 volts on vtvm.

k. Vary the screw on L1 until an "in-phase" pattern is obtained as shown in figure 7-2. Frequency should be 800 ± 8 cps.

l. Connect the flux valve synchro as shown in figure 7-2.

m. Turn switch "S2" to "SYN SIG".

n. Check the frequency. The frequency should be 800 ± 16 cps. At this frequency, an approximate in-phase pattern will appear. (See figure 7-2.) Remove all test equipment and replace orange lead to variable resistor R33.

7-8. CALIBRATION OF AMPLIFIER INPUT SIGNAL. Proceed as follows:

a. Apply C phase of 115-volt, 400 cps, 3-phase source to terminal B of receptacle "J1", and apply A phase (ground) to terminal H on the same receptacle.

b. Connect a vtvm across terminals K and H on receptacle J1.

c. Turn switch "S2" to "AMP INPUT SIG".

d. Vary variable resistor R33 until 0.6 volts is observed for both "CW" and "CCW" positions of switch "S4".

e. Lock variable resistor R33 in position.

7-9. CALIBRATION OF METER M2. In accordance with the table 7-1, connect the indicated voltages to the specified terminals. Turn the specified switches to the positions indicated (meter adjusting resistance R34 should be in full CCW position unless otherwise stated). Meter "M2" should read 100 ± 10 percent on the scale except where indicated.

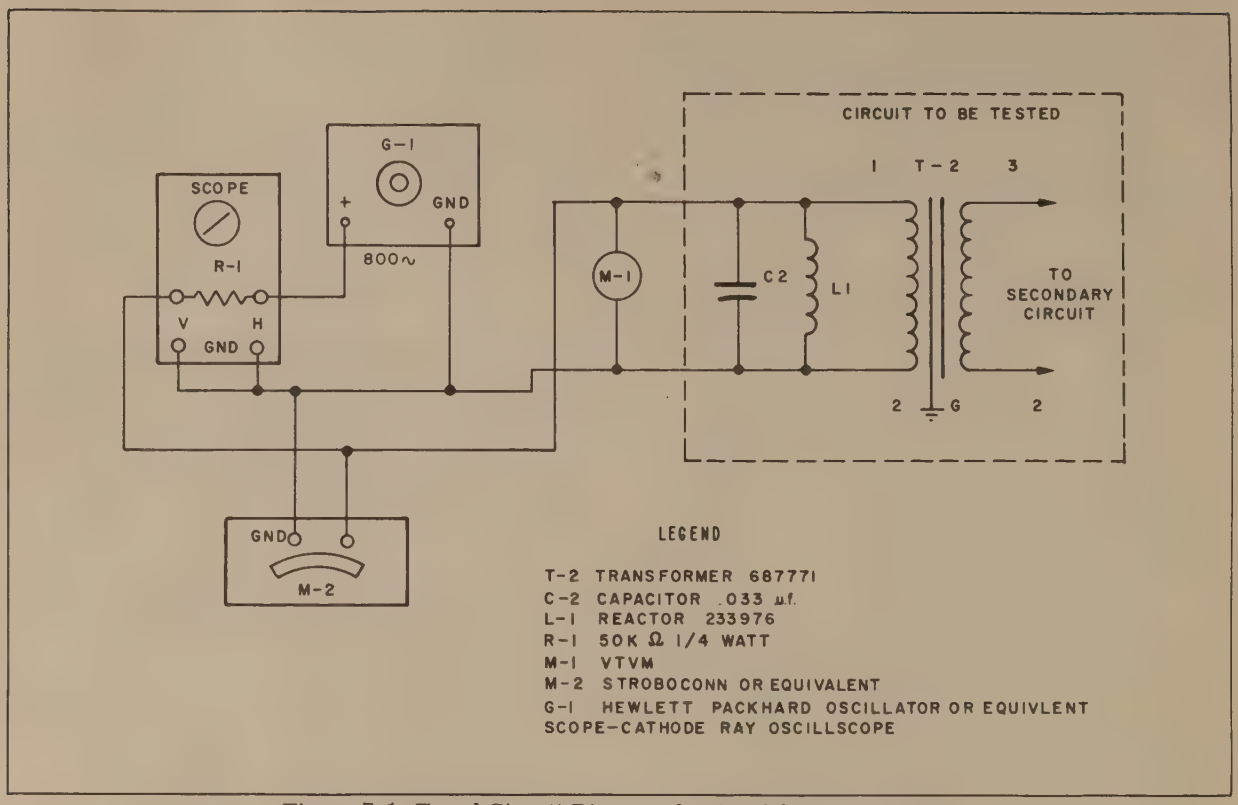


Figure 7-1. Tuned Circuit Diagram for Amplifier Input Signal

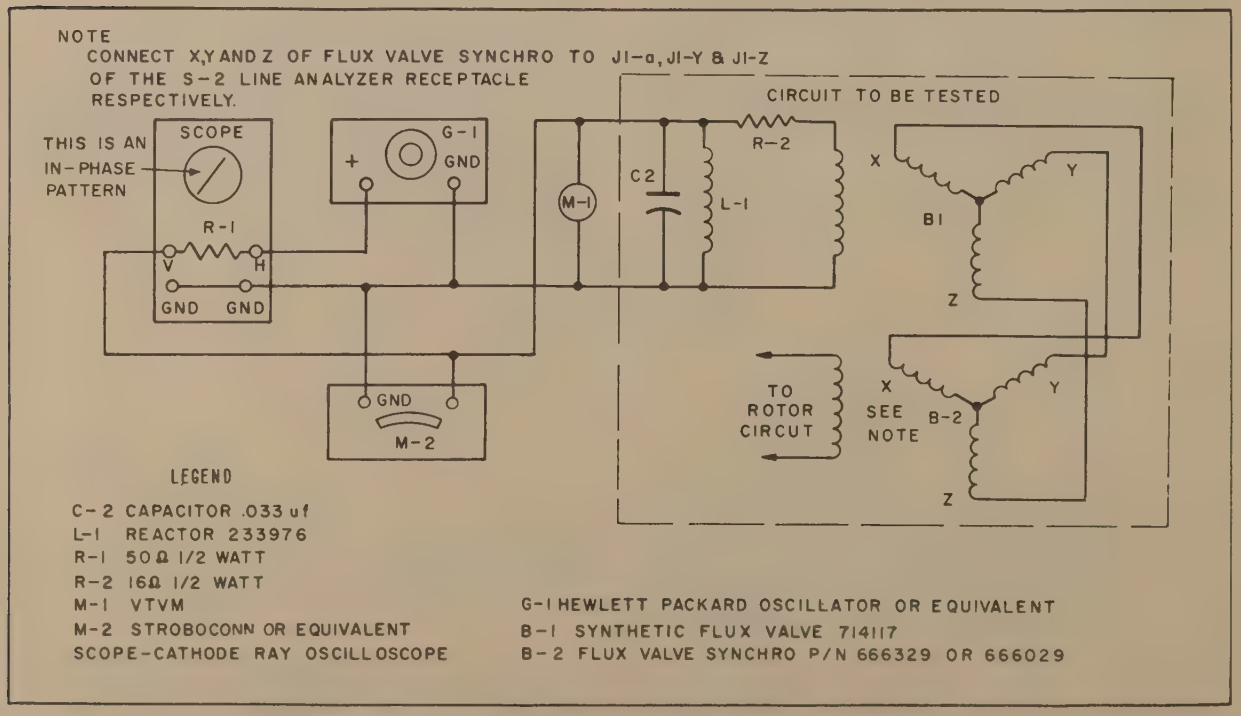


Figure 7-2. Tuned Circuit Diagram for Synthetic Valves

TABLE 7-1

METER "M2" CALIBRATION

Between Terminal	Between Terminal	Apply Voltage	Switch Position	Remarks
J1-F	J1-H	27.5VDC	"S1 AMP" "S3" position "1"	"M2" should read 100 ± 5%
J1-B	J1-H	115V 400 cps	"S1 AMP" "S3" position "3"	"I2" will light "M2" should read 100 ± 5%
J1-E	J1-H	75V 400 cps	"S1 AMP" "S3" position "7"	Apply both voltages at the same time. "I4" will light and "M2" should read
J1-J	J1-H	115V 400 cps	"S2 AMP INPUT SIG"	100 ± 15%
J1-J	J1-H	35V 400 cps	"S1 AMP" "S2 AMP INPUT SIG" "S3" position "4"	
J1-A	J1-H	30V 400 cps	"S1 AMP"	Apply both voltages at the same time. "I4" will light
J1-J	J1-H	115V 400 cps	"S2 AMP INPUT SIG" "S3" position "5"	
J1-A	J1-H	15V 400 cps	"S1 AMP" "S2 AMP INPUT SIG" "S3 position "5"	
J1-D	J1-H	23.5V 400 cps	"S1 AMP" "S3" position "6"	
J1-E	J1-H	7.5V 400 cps	"S1 AMP" "S3" position "7"	Meter "M2" should read 100 ± 18%
J1-S	J1-H	245VDC	"S1 AMP" "S3" position "8"	Meter "M2" should read 100 ± 15%
J1-P	J1-H	315VDC	"S1 AMP" "S2 AMP INPUT SIG" "S3" position "10"	Meter "M2" should read 100 ± 15%
J1-m	J1-H	27.5VDC	"S1 CONTROLLER" "S2 CONTROLLER" "S3" position "5"	Rotate Meter Adjust (R34) clockwise until "M2" reads 100%
J1-m	J1-H	27.5VDC	"S1 CONTROLLER" "S2 CONTROLLER" "S3" position "6"	Read on Meter "M2" 67.5 ± 5% connect 43K ohm ½ w resistor between J1-j & J1-H
J1-AA	J1-H	86.5V 400 cps	"S1 REP AMP" "S2 REP AMP" "S3" position "12"	

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SECTION VIII
INTRODUCTION

8-1. GENERAL.

8-2. This Illustrated Parts Breakdown lists, describes and illustrates the parts of the S-2 Line Analyzer, Part Number 1000548 manufactured by the Sperry Gyroscope Company Division of Sperry Rand Corporation, Great Neck, New York.

8-3. GROUP ASSEMBLY PARTS LIST.

8-4. Section IX, Group Assembly Parts List, provides the exploded view drawings and the part lists for each of the assemblies. The parts are grouped by assembly and subassembly. A system of indentation is used throughout the parts lists to show the relationship of the detail parts to the subassemblies and the relationship of the subassemblies to the major or main assemblies.

8-5. The parts lists are presented in a tabular form and contain the following information. Figure and Index Number - Provides the cross reference required between the lists and the illustrations. Part Number - Represents the part number of the original manufacturer, the AN Standard part number, or the JAN part number. Description - Represents the basic name of the part, plus any descriptive information or dimensions necessary to completely describe the part. Parts purchased from commercial sources show also a manufacturer's code symbol and the contractor's part number. This information is shown in parentheses after the Description. Units Per Assy - Indicate the quantity of a particular part necessary to assemble a subassembly or assembly. Usable on Code - This column provides a means of coding to indicate part application between similar units where the majority of the parts are the same. In instances where this similarity permits combining lists, this code indicates the parts peculiar to a specific assembly and those parts which are common to all of the assemblies combined.

8-6. The expression "Ref" is used in the Units Per Assy column to indicate parts that have had their quantity shown in a higher assembly.

8-7. NUMBERING SYSTEM.

8-8. Basically the Sperry part, drawing and specification numbers are Arabic numbers of two or more digits. When a drawing covers several similar parts the drawing number is suffixed by a dash number for each part. The drawing number together with the dash number makes up the part number. No coding is included in the numbering system, thus it is impossible to determine the nature of the part from the part number unless reference is made to the Numerical Index and the Group Assembly Parts List in the manner described in paragraph 8-16.

8-9. Parts to which no number has been assigned but which may be purchased on the open market are identified by the word "Coml", shown in the part number column. When ordering these parts the complete description must be given.

8-10. VENDORS CODE.

8-11. Parts which are available from sources other than the Sperry Gyroscope Company are listed under their manufacturer's part number. The identifying symbol of the manufacturer is listed after the description. A List of Manufacturers showing the identifying symbol and the Name and Address is listed on Page 21.

8-12. NUMERICAL INDEX.

8-13. Section X, Numerical Index lists all the part numbers appearing in the part number column of the Group Assembly Parts List.

8-14. For Government Standard Parts or Contractor Standard Hardware Parts, the figure and index number shown in the Numerical Index is the figure and index number of the first occurence of such a part in the Group Assembly Parts List.

8-15. REFERENCE DESIGNATION INDEX.

8-16. Section XI, Reference Designation Index is provided to enable rapid cross referencing between the wiring schematic, which is shown in Fig. 1-4 of this publication and exploded view drawings, which are shown in the Group Assembly Parts List. The Reference Designations are arranged in alphabetical and numerical order.

8-17. LOCATIONS OF PARTS IN CATALOG.

8-18. The location of parts when the part number is known is a relatively simple matter if the following steps are observed.

a. Locate the part number in the Numerical Index.

b. Note the figure and index number shown opposite the part number.

c. Locate the figure and index number in the Group Assembly Parts List.

d. Opposite the figure and index number is shown the part number and name.

8-19. The location of a part when the part number is not known is a slightly more difficult matter, but if the following steps are observed it should not be too difficult.

a. Refer to the applicable assembly breakdown.

b. Compare the part with the illustration until part is located.

c. Note the index number.

d. Locate the index number in the corresponding Group Assembly Parts List.

e. Opposite the index number is shown the part number and name.

f. If there are several similar parts on an illustration, reference should be made to all of them and the dimensions used to determine the part desired.

8-20. The location of a part when the reference designation is known is a relatively simple matter if the following steps are observed.

a. Locate the reference designation in the Reference Designation Index.

b. Note the figure and index number shown opposite it.

c. Locate the figure and index number in the Group Assembly Parts List.

d. Opposite the Index Number is shown the part number and name.

LIST OF MANUFACTURERS

Symbol	Name and Address
ALR	Allied Radio Corp. Chicago, Illinois
AXS	Allmetal Screw Products Co., Inc. New York, New York
BBR	Birnback Radio Co. New York, New York
BE	Burndy Engineering Co., Inc. New York, New York
BID	James G. Biddle Co. Philadelphia, Pennsylvania
CN	Centralab Division Globe - Union Inc. Milwaukee, Wisconsin
COR	Continental Rubber Works Boston, Massachusetts
CUT	Cutler-Hammer Inc. Milwaukee, Wisconsin
DLC	Dialight Corp. Brooklyn, New York
EN	Elastic Stop Nut Corp. of America Union, New Jersey
GE	General Electric Co. Schenectady, New York
GRIG	Grigsby Allison Co., Inc. Arlington Heights, Illinois
IRC	International Resistance Co. New York, New York
ITRC	International Rectifier Co. Los Angeles, California
JNS	Howard B. Jones Division Cinch Mfg. Corp. Chicago, Illinois
LUNN	Lunn Laminates Inc. Port Washington, New York
MDNP	Miller Dial and Name Plate Co. Los Angeles, California
MLL	James Millen Mfg. Co., Inc. Malden, Massachusetts
NAC	National Co., Inc. Malden, Massachusetts
OAK	Oak Mfg. Co. Chicago, Illinois
PCR	Phillips Control Corp. Chicago, Illinois
PTN	Patton-Mac Guyer Co. Providence, Rhode Island
SH	Shakeproof Inc. Division Illinois Tool Works Chicago, Illinois
SIE	Simplet Electric Co. Chicago, Illinois
SPR	Sprague Electric Co. North Adams, Massachusetts
WAL	Ward Leonard Electric Co. Mount Vernon, New York
WS	Weston Electrical Instrument Co. New York, New York
WHB	Whitney Blake Co. New Haven, Connecticut
ZE	Zierick Mfg. Corp. New Rochelle, New York

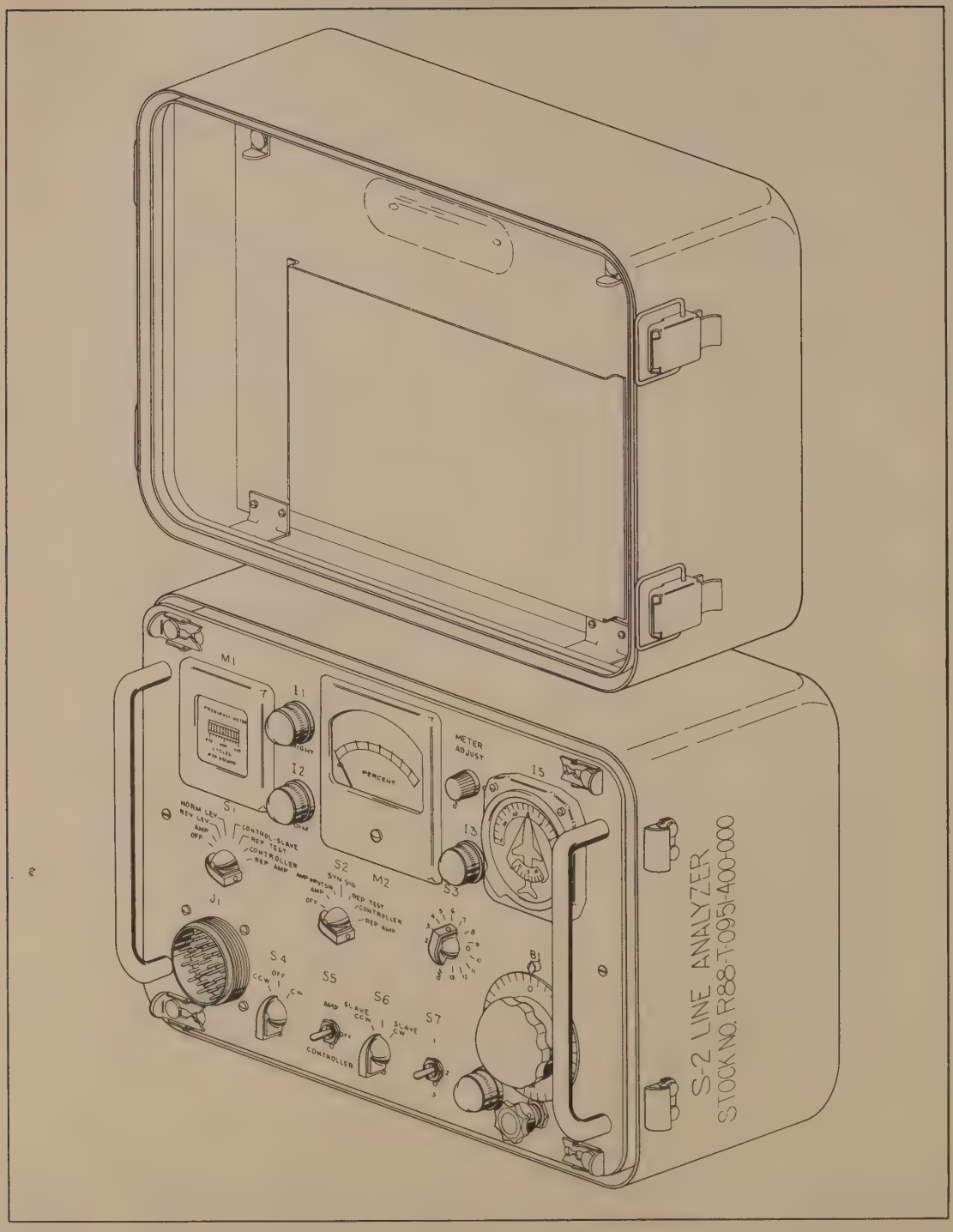

Figure 1. S-2 Line Analyzer

SECTION IX
GROUP ASSEMBLY PARTS LIST

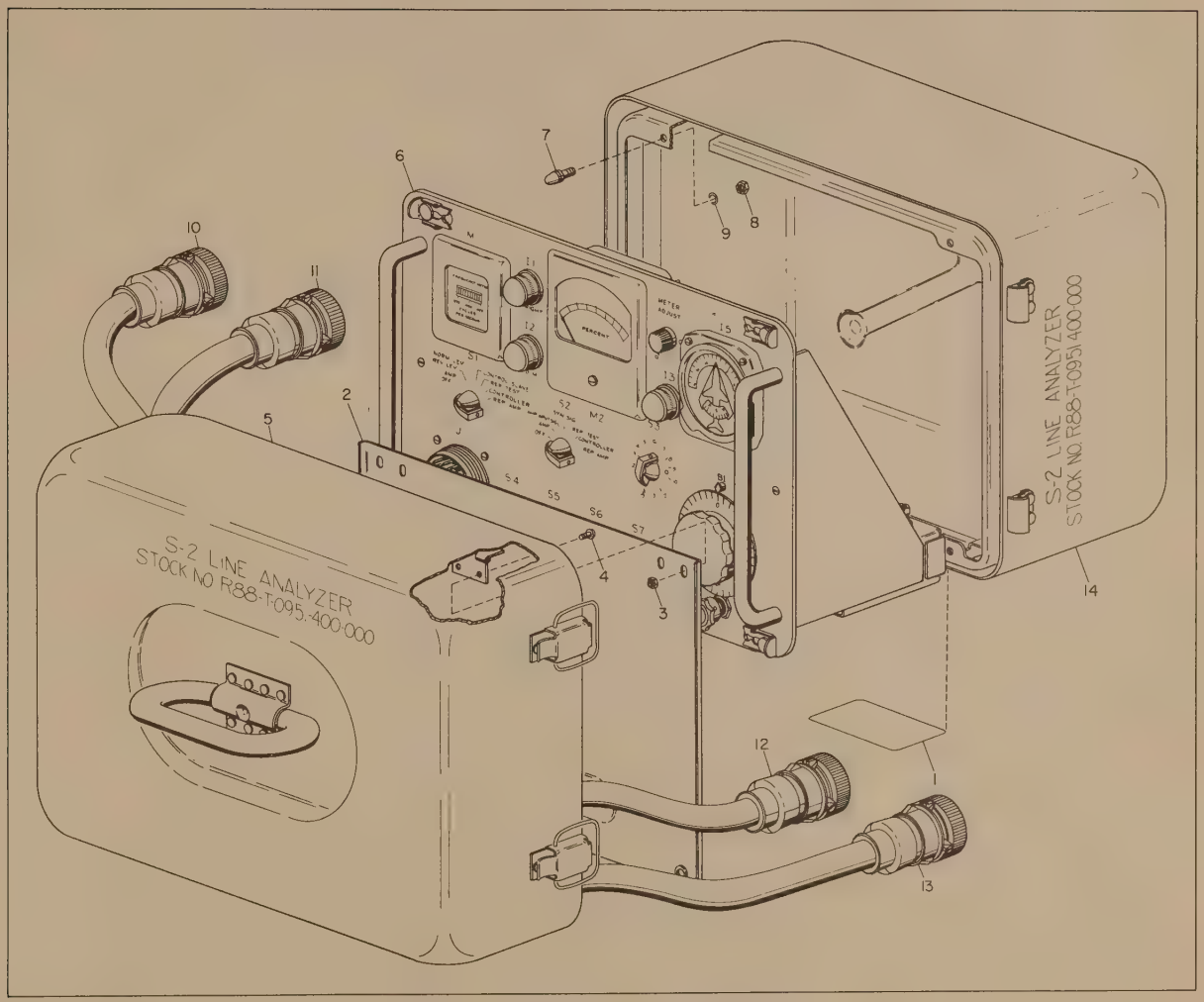

Figure 2. S-2 Line Analyzer Assembly

Figure and Index No.	Part Number	1 2 3 4 5 6 7 Description	Units Per Assy	Usable on Code
		S-2 LINE ANALYZER ASSEMBLY		
2-	1000548	ANALYZER ASSY, S-2 Line	1	All
-1	744088	. NAMEPLATE (Special requirements on MDNP Nameplate)	1	
-2	1775048	. PLATE ASSY (ATTACHING PARTS)	1	
-3	68NM-62	NUT, Self locking .138 in.-32 (EN) (Sperry Part No. 0436-012)	4	
-4	714595-224	. SCREW, Binding hd .138-32 x 3/8 in.	4	
-5	1775047	. COVER ASSY	1	
-6	1775103	. PANEL AND CHASSIS ASSY (See fig. 3 for breakdown)	4	All

Figure and Index. No.	Part Number	1 2 3 4 5 6 7 Description	Units Per Assy	Usable on Code
		S-2 LINE ANALYZER ASSEMBLY (cont)		
2-7	323293	. STUD, Snapslide	4	All
		(ATTACHING PARTS)		
-8	AN340C416	. NUT, hex, CRES 1/4 in.-20	4	
-9	AN935-416	. WASHER, Med spring lock for 1/4 in. screw	4	
-10	1775231	. CABLE ASSY, "B" (See fig. 6 for breakdown)	1	
-11	1775232	. CABLE ASSY, "C" (See fig. 6 for breakdown)	1	
-12	1775233	. CABLE ASSY, "D" (See fig. 6 for breakdown)	1	
-13	1775234	. CABLE ASSY, "E" (See fig. 6 for breakdown)	1	
-14	1775061	. CABLE ASSY	1	All
		PANEL AND CHASSIS ASSEMBLY		
3-	1775103	. PANEL AND CHASSIS ASSY (see fig. 2-6 for next higher assy)	Ref	All
-1	3-3102E36-52P	. . CONNECTOR, Receptacle (WHB) (Sperry Part No. 742157)	1	
		(ATTACHING PARTS)		
-2	AN340C6	. . NUT, Hex, CRES .138 in.-32	4	
-3	Coml	. . WASHER, External tooth lock for .138 in. screw (SH) (Sperry Part No. 824636-3)	4	
-4	Coml	. . SCREW, Binding hd CRES. 138-32 x 1/2 in. (AXS) (Sperry Part No. 0453-226)	4	
-5	29(1/4)	. . TERMINAL, Soldering (ZE) (Sperry Part No. 092-9)	2	
-6	4996-2	. . METER, Frequency (BID) (Sperry Part No. 616519)	1	
-7	616607	. . METER, Microammeter DC (Special requirements on WS meter Type 741)	1	
-8	6S6DC	. . LAMP, Incandescent (GE) (Sperry Part No. 0177-91)	2	
-9	41202-135	. . INDICATOR, Light (DLC) (Sperry Part No. 718032-5)	2	
-10	55H040	. . KNOB, Round pointer (ALR) (Sperry Part No. 880777)	1	
-11	AN3137-304	. . LAMP, Incandescent (Sperry Part No. 0176-74)	1	
-12	41202-112	. . INDICATOR, Light (DLC) (Sperry Part No. 718032-2)	1	
-13	310451	. . POINTER, Dial (Nac)	1	
		(ATTACHING PARTS)		
-14	AN340C4	. . NUT, Hex, CRES .112 in.-40 (Sperry Part No. 0424-008)	1	
-15	Coml	. . WASHER, Internal tooth lock for .112 in. screw (SH) (Sperry Part No. 824637-3)	1	
-16	315132	. . SPACER	1	
-17	ODD	. . DRIVE, Pinch (NAC) (Sperry Part No. 306875)	1	
		(ATTACHING PARTS)		
-18	1222-01	. . WASHER, Internal tooth lock (SH) (Sperry Part No. 236148)	1	
-19	315831	. . SPACER	1	
-20	713339	. . DIAL	1	
		(ATTACHING PARTS)		
-21	Coml	. . SCREW, Binding hd CRES .112-40 x 1/4 in. (AXS) (Sperry Part No. 0453-126)	3	
-22	833801	. . KNOB (Special requirements on NAC Knob Type HRK)	1	
-23	5050	. . KNOB (BBR) (Sperry Part No. 212188)	5	
-24	6S6DC	. . LAMP, Incandescent (GE) (Sperry Part No. 0177-91)	1	
-25	41202-111	. . INDICATOR, Light (DLC) (Sperry Part No. 718032-1)	1	
-26	JANSTHDE	. . SWITCH, Toggle (CUT) (Sperry Part No. 0134-4)	2	
		(ATTACHING PARTS)		
-27	1222-01	. . WASHER, Internal tooth lock (SH) (Sperry Part No. 236148)	2	All

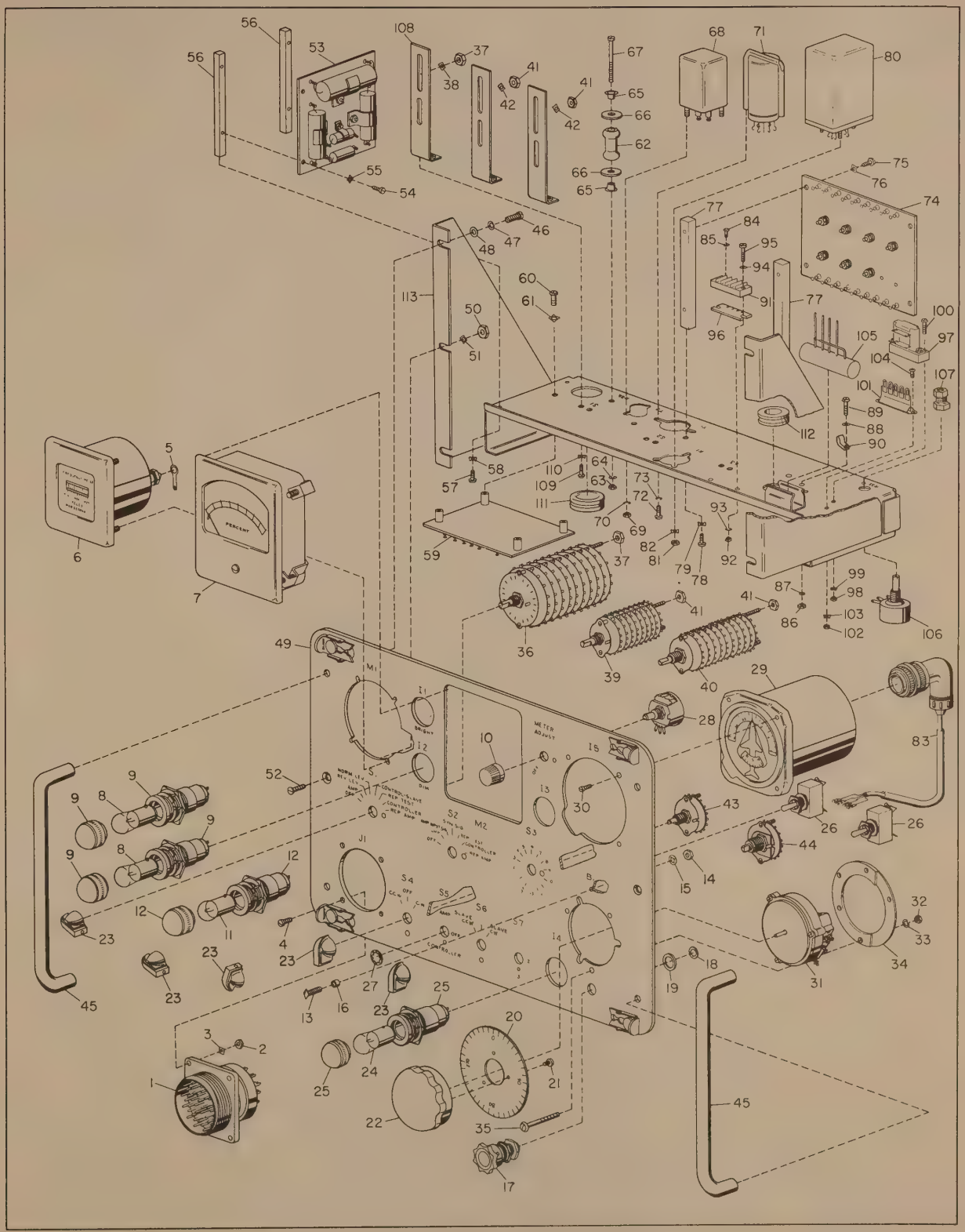

Figure 3. Panel and Chassis Assembly

Figure and Index No.	Part Number	1 2 3 4 5 6 7 Description	Units per Assy	Usable on Code
		PANEL AND CHASSIS ASSEMBLY (Cont)		
3-28	RW4ATSC153B	. . RESISTOR, Variable composition (Sperry Part No. 0522-68)	1	All
-29	673147	. . REPEATER ASSY, Gyrosyn	1	
		(ATTACHING PARTS)		
-30	823957-231	. . SCREW, Binding hd CRES .138-32 x 1 in.	3	
-31	714117	. . SYNCHRO ASSY	1	
		(ATTACHING PARTS)		
-32	AN340C6	. . NUT, Hex, CRES .138 in.-32	3	
-33	AN935-6	. . WASHER, Med spring lock for .138 in. screw	3	
-34	837727	. . RING, Mounting	1	
-35	Coml	. . SCREW, Binding hd CRES .138-32 x 1-3/4 in. (AXS) (Sperry Part No. 0453-236)	3	
-36	616547-1	. . SWITCH, Rotary (special requirements on OAK Switch Type DC)	1	
		(ATTACHING PARTS)		
-37	AN340C5	. . NUT, Hex CRES .125 in.-40	4	
-38	Coml	. . WASHER, External tooth lock for .125 in. screw (SH) (Sperry Part No. 824636-2)	2	
-39	616527	. . SWITCH, Rotary (special requirements on GRIG switch Type 414LW)	1	
-40	616531	. . SWITCH, Rotary (special requirements on GRIG switch Type 414LW)	1	
		(ATTACHING PARTS)		
-41	AN340C4	. . NUT, Hex, CRES .112 in.-40	8	
-42	Coml	. . WASHER, External tooth lock for .112 in. screw (SH) (Sperry Part No. 824636-1)	4	
-43	600876-103	. . SWITCH, Rotary (special requirements on CN switch series 20)	1	
-44	616636	. . SWITCH, Rotary (special requirements on OAK switch Type F)	1	
-45	1715032	. . HANDLE	2	
		(ATTACHING PARTS)		
-46	Coml	. . SCREW, Binding hd CRES .190-32 x 9/16 in. (AXS) (Sperry Part No. 0453-360)	4	
-47	AN935-10	. . WASHER, Med spring lock for .190 in. screw	4	
-48	AN960610	. . WASHER, Plain for .190 in. screw	4	
-49	1775060	. . PANEL ASSY	1	
		(ATTACHING PARTS)		
-50	AN345C10	. . NUT, Hex CRES .190 in.-32	2	
-51	Coml	. . WASHER, External tooth lock for .190 in. screw (SH) (Sperry Part No. 824636-5)	2	
-52	Coml	. . SCREW, Flat hd CRES .190-32 x 5/8 in. (AXS) (Sperry Part No. 0411-360)	2	
-53	1750020	. . BOARD ASSY, Components (see fig. 4 for breakdown)	1	
		(ATTACHING PARTS)		
-54	Coml	. . SCREW, Binding hd CRES .112-40 x 3/8 in. (AXS) (Sperry Part No. 0453-130)	4	
-55	Coml	. . WASHER, External toth lock for .112 in. screw (SH) (Sperry Part No. 824636-1)	4	
-56	1715034	. . POST	2	
		(ATTACHING PARTS)		
-57	Coml	. . SCREW, Binding hd CRES .138-32 x 5/16 in. (AXS) (Sperry Part No. 0453-222)	2	
-58	Coml	. . WASHER, External tooth lock for .138 in. screw (SH) (Sperry Part No. 824636-3)	2	
-59	1750018	. . BOARD ASSY, Components (see fig. 5 for breakdown)	1	
		(ATTACHING PARTS)		
-60	Coml	. . SCREW, Binding hd CRES .138-32 x 3/8 in. (AXS) (Sperry Part No. 0453-224)	4	
-61	Coml	. . WASHER, External tooth lock for .138 in. screw (SH) (Sperry Part No. 824636-3)	4	
-62	RW30G401	. . RESISTOR, Fixed wire wound 400 ohms ± 5% 8W (Sperry Part No. 098-73)	1	
		(ATTACHING PARTS)		
-63	AN340C6	. . NUT, Hex CRES .138 in.-40	1	
-64	AN935-6	. . WASHER, Med spring lock for .138 in. screw	1	
-65	310208	. . WASHER, Centering	2	
-66	0171-12	. . WASHER, Mica	2	All

Figure and Index. No.	Part Number	1 2 3 4 5 6 7 Description	Units per Assy	Usable on Code
		PANEL AND CHASSIS ASSEMBLY (cont)		
3-67	Coml	. . SCREW, Fil h CRES .138-32 x 1-1/2 in. (AXS) (Sperry Part No. 0407-235)	1	All
-68	687771	. . TRANSFORMER ASSY (hermetically sealed)	1	
		(ATTACHING PARTS)		
-69	AN340C6	. . NUT, Hex, CRES .138 in.-32	2	
-70	AN935-6	. . WASHER, Med spring lock for .138 in. screw	2	
-71	661712	. . TRANSFORMER ASSY (hermetically sealed)	1	
		(ATTACHING PARTS)		
-72	Coml	. . SCREW, Binding hd CRES .138-32 x 3/8 in. (AXS) (Sperry Part No. 0453-224)	2	
-73	AN935-6	. .. WASHER, Med spring lock for .138 in. screw	2	
-74	616630	. . RESISTOR ASSY (special requirements on WS resistor assy Model 9999)	1	
		(Attaching Parts)		
-75	Coml	. . SCREW, Binding hd CRES .112-40 x 3/8 in. (AXS) (Sperry Part No. 0453-130)	4	
-76	Coml	. . WASHER, External tooth lock for .112 in. screw (sh) (Sperry Part No. 824636-1)	4	
-77	1715033	. . POST	2	
		(ATTACHING PARTS)		
-78	Coml	. . SCREW, Binding hd CRES .138-32 x 5/16 in. (AXS) (Sperry Part No. 0453-222)	2	
-79	Coml	. . WASHER, External tooth lock for .138 in. screw (SH) (Sperry Part No. 824636-3)	2	
-80	1750120	. . RELAY, 400 cycle (special requirements on PCR Relay)	1	
		(ATTACHING PARTS)		
-81	AN340C6	. . NUT, Hex, CRES .138 in.-32	3	
-82	Coml	. . WASHER, External tooth lock for .138 in. screw (AXS) (Sperry Part No. 824636-3)	3	
-83	1775230	. . CABLE ASSY "A" (see fig. 7 for breakdown)	1	
		(ATTACHING PARTS)		
-84	Coml	. . SCREW, Binding hd CRES .086-56 x 1/4 in. (AXS) (Sperry Part No. 0453-062)	4	
-85	AN935-2	. . WASHER, Med spring lock for .086 in. screw	4	
-86	AN345C10	. . NUT, Hex, CRES .190 in.-32	1	
-87	AN935-10	. . WASHER, Med spring lock for .190 in. screw	1	
-88	AN960C10	. . WASHER, Plain for .190 in. screw	1	
-89	Coml	. . SCREW, Binding hd CRES .190-32 x 1/2 in. (AXS) (Sperry Part No. 0453-358)	1	
-90	5FF	. . CLAMP, Cable (LUNN) (Sperry Part No. 0254-5)	1	
-91	4-1716C	. . BOARD, Terminal (JNS) (Sperry Part No. 0372-04)	1	
		(ATTACHING PARTS)		
-92	AN340C2	. . NUT, Hex, CRES .086 in.-56	2	
-93	AN935-2	. . WASHER, Med spring lock for .086 in. screw	2	
-94	303930	. . SPACER	2	
-95	Coml	. . SCREW, Fil h CRES .086-56 x 1/2 in. (AXS) (Sperry Part No. 0407-068)	2	
-96	1715031	. . STRIP, Marker	1	
-97	233976	. . CORE ASSY	1	
		(ATTACHING PARTS)		
-98	AN340C4	. . NUT, Hex,CRES .112 in.-40	2	
-99	Coml	. . WASHER, External tooth lock for .112 in. screw (SH) (Sperry Part No. 824636-1)	2	
-100	Coml	. . SCREW, Binding hd CRES .112-40 x 7/16 in. (AXS) (Sperry Part No. 0453-131)	2	
-101	2005	. . BOARD, Terminal (JNS) (Sperry Part No. 813200-5)	1	
		(ATTACHING PARTS)		
-102	AN340C4	. . NUT, Hex, CRES .112 in.-40	2	
-103	Coml	. . WASHER, External tooth lock for .112 in. screw (SH) (Sperry Part No. 824636-1)	2	
-104	Coml	. . SCREW, Binding hd CRES .112-40 x 1/4 in. (AXS) (Sperry Part No. 0453-126)	2	
-105	D6686A	. . RECTIFIER, Metallic selenium (ITRC) (Sperry Part No. 740577)	1	All

Figure and Index No.	Part Number	1 2 3 4 5 6 7	Description	Units per Assy	Usable on Code
			PANEL AND CHASSIS ASSEMBLY (cont)		
3-106	RV4ATSD104B	. .	RESISTOR, Variable composition 100000 ohms ±20% 2w (Sperry Part No. 0522-103)	1	All
			(ATTACHING PART)		
-107	10061	. .	LOCK, Shaft (MLL) (Sperry Part No. 233724)	1	
-108	1750021	. .	BRACKET ASSY	3	
			(ATTACHING PARTS)		
-109	Coml	. .	SCREW, Binding hd CRES .138-32 x 5/16 in. (AXS) (Sperry Part No. 0453-222)	6	
-110	Coml	. .	WASHER, External tooth lock for .138 in. screw (SH) (Sperry Part No. 824636-3)	6	
-111	3305	. .	GROMMET, Elastic (COR) (Sperry Part No. 0128-31)	1	
-112	AN931-9-13	. .	GROMMET, Elastic (Sperry Part No. 0128-23)	1	
-113	1775046	. .	CHASSIS ASSY	1	All
			COMPONENTS BOARD ASSEMBLY		
4-	1750020	. .	BOARD ASSY, Components (see fig. 3-53 for next higher assy)	Ref	All
-1	CP08AIKC333K	. . .	CAPACITOR, Fixed paper dielectric 33,000 uuf ±10% 200 V dc working (Sperry Part No. 0328-13)	1	
-2	196PL8492S13	. . .	CAPACITOR, Fixed paper dielectric 680,000 uuf ±10% 200 V dc working (SPR) (Sperry Part No. 716324-072)	1	
-3	196P47496S13	. . .	CAPACITOR, Fixed paper dielectric 470,000 uuf ±10% 600 V dc working (Spr) (Sperry Part No. 716324-144)	1	
-4	196P39491S13	. . .	CAPACITOR, Fixed paper dielectric 390,000 uuf ±10% 100 V dc working (SPR) (Sperry Part No. 716324-032)	1	
			(ATTACHING PARTS)		
-5	AN340C6	. . .	NUT, Hex, CRES .138 in.-32	3	
-6	AN935-6	. . .	WASHER, Med spring lock for .138 in. screw	3	All

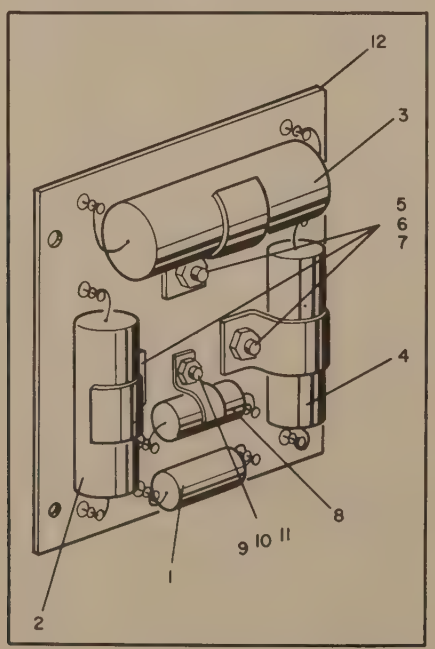

Figure 4. Components Board Assembly

Figure and Index No.	Part Number	1 2 3 4 5 6 7	Description	Units per Assy	Usable on Code
			COMPONENTS BOARD ASSEMBLY (cont)		
4-7	Coml	. . .	SCREW, Binding hd CRES .138-32 x 3/8 in. (AXS) (Sperry Part No. 0453-224)	3	All
-8	196P18396S13	. . .	CAPACITOR, Fixed paper dielectric 18,000 uuf ±10% 600 V dc working (SPR) (Sperry Part No. 716324-127)	1	
			(ATTACHING PARTS)		
-9	AN340C4	. . .	NUT, Hex, CRES .112 in.-40	1	
-10	AN935-4	. . .	WASHER, Med spring lock for .112 in. screw	1	
-11	Coml	. . .	SCREW, Binding hd CRES .112-40 x 3/8 in. (AXS) (Sperry Part No. 0453-224)	1	
-12	1750019	. . .	BOARD ASSY, Terminal	1	All
			COMPONENTS BOARD ASSEMBLY		
5-	1750018	. .	BOARD ASSY, Components (see fig. 3-59 for next higher assy)	Ref	All
-1	RC42BF102J	. . .	RESISTOR, Fixed molded composition 1,000 ohms ±5% 2 w (Sperry Part No. 075-49)	1	
-2	RC42BF751J	. . .	RESISTOR, Fixed molded composition 750 ohms ±5% 2 w (Sperry Part No. 075-46)	1	
-3	5X1	. . .	RESISTOR, Fixed wire wound 3680 ohms ±2% 5 w (WAL) (Sperry Part No. 880891-1)	1	
-4	5X1	. . .	RESISTOR, Fixed wire wound 3680 ohms ±2% 5 w (WAL) (Sperry Part No. 880891-1)	1	
-5	5X2	. . .	RESISTOR, Fixed wire wound 6200 ohms ±2% 5 w (WAL) (Sperry Part No. 880891-2)	1	
-6	RC42BF103K	. . .	RESISTOR, Fixed molded composition 10,000 ohms ±10% 2 w (Sperry Part No. 076-37)	1	
-7	RC20BF513J	. . .	RESISTOR, Fixed molded composition 51,000 ohms ±5% 1/2 w (Sperry Part No. 069-90)	1	
-8	RC20BF513J	. . .	RESISTOR, Fixed molded composition 51,000 ohms ±5% 1/2 w (Sperry Part No. 069-90)	1	
-9	723155-009	. . .	RESISTOR, Fixed deposited film 56,000 ohms ±1% 1/2 w (Special requirements on IRC Type DCC)	1	
-10	723155-009	. . .	RESISTOR, Fixed deposited film 56,000 ohms ±1% 1/2 w (Special requirements on IRC Type DCC)	1	
-11	723155-009	. . .	RESISTOR, Fixed deposited film 56,000 ohms ±1% 1/2 w (Special requirements on IRC Type DCC)	1	
-12	723155-009	. . .	RESISTOR, Fixed deposited film 56,000 ohms ±1% 1/2 w (Special requirements on IRC Type DCC)	1	
-13	RC42BF103J	. . .	RESISTOR, Fixed molded composition 10,000 ohms ±5% 2 w (Sperry Part No. 075-73)	1	
-14	RC42BF202J	. . .	RESISTOR, Fixed molded composition 2,000 ohms ±5% 2 w (Sperry Part No. 075-56)	1	
-15	RC20BF163J	. . .	RESISTOR, Fixed molded composition 16,000 ohms ±5% 1/2 w (Sperry Part No. 069-78)	1	
-16	1750017	. . .	BOARD ASSY, Terminal	1	All

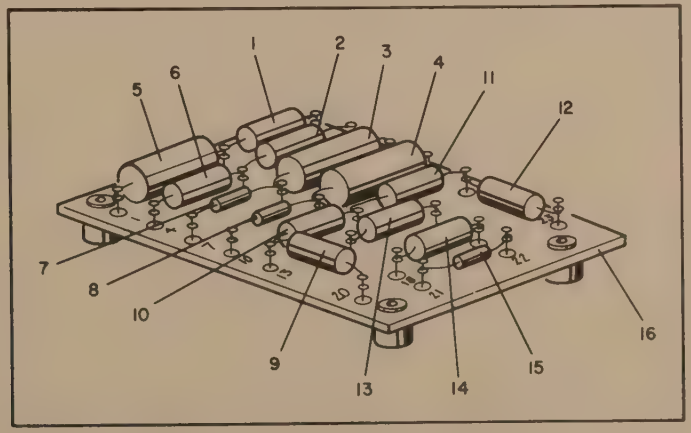

Figure 5. Components Board Assembly

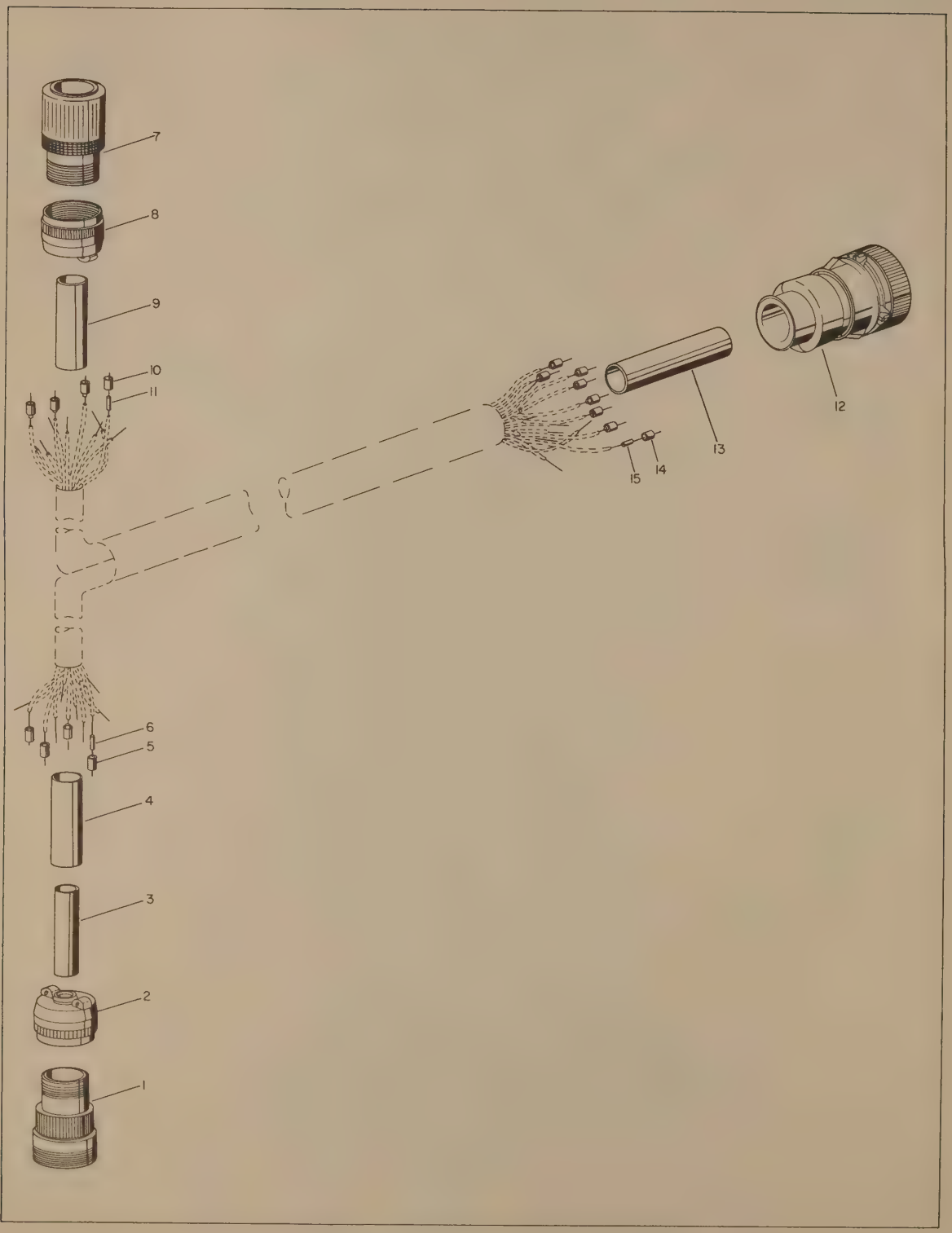

Figure 6. Cable Assemblies

Figure and Index No.	Part Number	1 2 3 4 5 6 7	Description	Units Per Assy	Usable on Code
			CABLE ASSEMBLIES		
			APPLICATION CODE		
			Code — Part Number a — 1775231 b — 1775232 c — 1775233 d — 1775234		
6-	1775231		CABLE ASSY "B" (See fig. 2 for next higher assy)	Ref	a
6-	1775232		CABLE ASSY "C" (See fig. 2 for next higher assy)	Ref	b
6-	1775233		CABLE ASSY "D" (See fig. 2 for next higher assy)	Ref	c
6-	1775234		CABLE ASSY "E" (See fig. 2 for next higher assy)	Ref	d
-1	AN3106A20-27PX		. CONNECTOR, Plug male contact (Sperry Part No. 713612-23)	1	a
-1	AN3106C18-1P		. CONNECTOR, Plug male contact (Sperry Part No. 836483-21)	1	b
-1	AN3101A20-27P		. CONNECTOR, Plug male contact (Sperry Part No. 847834-01)	1	c
-1	AN3101A20-29P		. CONNECTOR, Plug male contact (Sperry Part No. 728823-01)	1	d
-2	AN3057-128		. CLAMP, Cable (Sperry Part No. 723846-12)	3	a,c,d
-2	AN3057-108		. CLAMP, Cable (Sperry Part No. 723846-10)	1	b
-3	AN3420-8A		. BUSHING, Telescoping (Sperry Part No. 853384-08)	1	a
-3	AN3420-10A		. BUSHING, Telescoping (Sperry Part No. 853384-10)	1	b
-3	AN3420-12A		. BUSHING, Telescoping (Sperry Part No. 853384-12)	1	c
-4	AN3420-12A		. BUSHING, Telescoping (Sperry Part No. 853384-12)	1	a
-5	YOC100		. FERRULE, Cable (outer) (BE) (Sperry Part No. 0281-10)	1	c
-5	YOC100		. FERRULE, Cable (outer) (BE) (Sperry Part No. 0281-10)	4	d
-6	YIC080		. FERRULE, Cable (inner) (BE) (Sperry Part No. 0358-08)	1	c
-6	YIC080		. FERRULE, Cable (inner) (BE) (Sperry Part No. 0358-08)	4	d
-7	AN3101A20-27SY		. CONNECTOR, Plug female contact (Sperry Part No. 847833-03)	1	a
-7	AN3106A18-1S		. CONNECTOR, Plug female contact (Sperry Part No. 830716-01)	1	b
-7	AN3106A20-27S		. CONNECTOR, Plug female contact (Sperry Part No. 711012-01)	1	c
-7	AN3106A20-29S		. CONNECTOR, Plug female contact (Sperry Part No. 713782-21)	1	d
-8	AN3057-128		. CLAMP, Cable (Sperry Part No. 723846-12)	1	a,c,d
-8	AN3057-108		. CLAMP, Cable (Sperry Part No. 723846-10	1	b
-9	AN3420-10A		. BUSHING, Telescoping (Sperry Part No. 853384-10)	1	a,b
-9	AN3420-12A		. BUSHING, Telescoping (Sperry Part No. 853384-12)	1	c
-10	YOC100		. FERRULE, Cable (outer) (BE) (Sperry Part No. 0281-10)	1	c
-10	YOC100		. FERRULE, Cable (inner) (BE) (Sperry Part No. 0281-10)	4	d
-11	YIC080		. FERRULE, Cable (inner) (BE) (Sperry Part No. 0358-08)	1	c
-11	YIC080		. FERRULE, Cable (inner) (BE) (Sperry Part No. 0358-08)	4	d
-12	3-3106E36-52S		. CONNECTOR, Plug female contact (WHB) (Sperry Part No. 742158)	1	All
-13	736892-10		. MARKER, Cable 1775231 controller cable	1	a
-13	736892-11		. MARKER, Cable 1775232 repeater amplifier cable	1	b
-13	726973-5		. MARKER, Cable 1775233 amplifier cable	1	c
-13	1750116-1		. MARKER, Cable 1775234 control cable	1	d
-14	YOC100		. FERRULE, Cable (outer) (BE) (Sperry Part No. 0281-10)	2	c
-14	YOC100		. FERRULE, Cable (outer) (BE) (Sperry Part No. 0281-10)	8	d
-15	YIC080		. FERRULE, Cable (inner) (BE) (Sperry Part No. 0358-08)	2	c
-15	YIC080		. FERRULE, Cable (inner) (BE) (Sperry Part No. 0358-08)	8	d

Figure and Index No.	Part Number	1 2 3 4 5 6 7	Description	Units per Assy	Usable on Code
			CABLE ASSEMBLY "A"		
7-	1775230		CABLE ASSEMBLY "A" (See fig. 2 for next higher assy)	Ref	All
-1	AN3108A14S-5S		. CONNECTOR, Plug female contact (Sperry Part No. 713896-21	1	
-2	AN3054-6		. NUT, conduit coupling (Sperry Part No. 813052-6)	1	
-3	813900-6		. FERRULE, Plastic tubing style F (SIE)	1	
-4	813900-5		. FERRULE, Plastic tubing style M (SIE)	1	
-5	RM103A		. TERMINAL, Soldering (PTN) (Sperry Part No. 712170-01)	1	
-6	637838-101		. MARKER, Wire	4	
-7	637838-102		. MARKER, Wire	1	
-8	637838-103		. MARKER, Wire	1	
-9	637838-104		. MARKER, Wire	1	
-10	736891-60		. MARKER, Cable 1775230 repeater cable	1	
				1	All

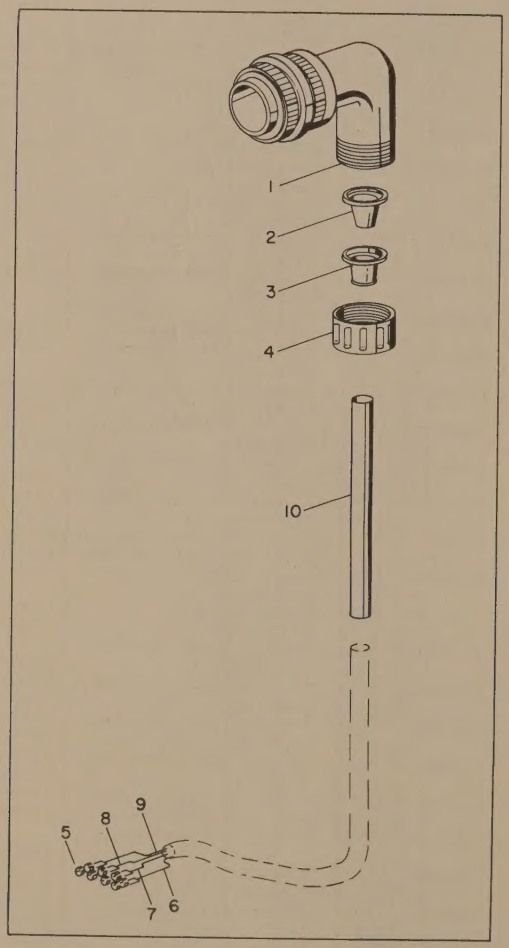

Figure 7. Cable Assembly "A"

SECTION X
NUMERICAL INDEX

Class Code or Stock No.	Part Number	Source Code	Fig. & Index No.	Qty Per Article
	Screw .086-56 x 1/4		3-84	4
	Screw .086-56 x 1/2		3-95	2
R43S-280494-8	Screw .112-40 x 1/4		3-21	5
R43S-280494-12	Screw .112-40 x 3/8		3-54	8
R43	Screw .112-40 x 7/16		3-100	2
R88SPE	Screw .138-32 x 5/16		3-57	10
R43S-280496-12	Screw .138-32 x 3/8		3-60	10
R43S-280496-16	Screw .138-32 x 1/2		3-4	4
	Screw .138-32 x 1-1/2		3-67	1
	Screw .138-32 x 1-3/4		3-35	3
R43S-280600-16	Screw .190-32 x 1/2		3-89	1
	Screw .190-32 x 9/16		3-46	4
	Screw .190-32 x 5/8		3-52	2
R43-W96905-20	Washer .112		3-15	1
R43-W96906-15	Washer .112		3-42	16
	Washer .125		3-38	2
R43-W96500	Washer .138		3-3	21
R43-W96906-30	Washer .190		3-51	2
R43-N41500	AN3040C6		3-81	3
	AN3054-6		7-2	1
	AN3057-108		6-2	2
	AN3057-128		6-2	4
	AN3101A20-27P		6-1	1
	AN3101A20-27SX		6-7	1
	AN3101A20-29P		6-1	1
	AN3106A18-1P		6-1	1
R17P-4425-110	AN3106A18-1S		6-7	1
R17P-4426-208-10	AN3106A20-27PX		6-1	1
R17P-4426-212	AN3106A20-27S		6-7	1
R17P-4426-301-130	AN3106A20-29S		6-7	1
	AN3108A14S-5S		7-1	1
	AN3137-304		3-11	1
	AN340C2		3-92	2
	AN340C4		3-14	14
	AN340C416		2-8	4
	AN340C5		3-37	4
	AN340C6		3-2	13
	AN3420-10A		6-3	2
	AN3420-12A		6-3	3
	AN3420-8A		6-3	1
	AN345C10		3-50	3
	AN931-9-13		3-112	1
	AN935-10		3-47	5
	AN935-2		3-85	6
	AN935-4		4-10	1
	AN935-416		2-9	4
	AN935-6		3-33	11
	AN960C10		3-48	5
	CP08AIKC333K		4-1	1
	D6686A		3-105	1
	JANST4DE		3-26	2
	ODD		3-17	1
R16JAN	RC20BF103K		5-6	1
	RC20BF163J		5-15	1
R16JAN	RC20BF513J		5-8	1
	RC42BF102J		5-1	1
	RC42BF103J		5-13	1
R16JAN	RC42BF103K		5-6	1
	RC42BF202J		5-14	1
R16JAN	RC42BF751J		5-2	1
R17T5548-78	RM103A		7-5	4
	RV4ATSC153B		3-28	1
R16R9977-294	RV4ATSD104B		3-106	1
R16JAN	RW30G401		3-62	1
R17F1526-35	YIC080		6-6	20
			6-11	
			6-15	
R17F1526-50	YOC100		6-5	20
			6-10	
			6-14	
	0171-2		3-16	2
	100548		2	1
R16L5340	10061		3-107	1
	1222-01		3-18	2
			3-27	
	1715031		3-96	1
	1715032		3-45	2
	1715033		3-77	2
	1715034		3-56	2
	1750017		5-16	1
	1750018		3-59	2
			4	
	1750019		3-12	1
	1750020		3-53	2
			4	
	1750021		3-108	3
	1750116-1		6-13	1
	1750120		3-80	1
	1775046		3-113	1
	1775047		2-5	1
	1775048		2-2	1
	1775060		3-49	1
	1775061		2-14	1
	1775103		2-6	2
			3	
	1775230		3-83	1
	1775231		2-10	1
	1775232		2-11	1
	1775233		2-12	1
	1775234		2-13	1
	196P18396S13		4-8	1
	196P39491S13		4-4	1
R16C47149-7406N	196P47496S13		4-3	1
	196P68492S13		4-2	1
	2005		3-101	1
	233976		3-97	1
R17T4810-50	29(1/4)		3-5	2
	3-3102E36-52P		3-1	1
	3-3106E36-52S		6-12	1
	303930		3-94	2

Class Code or Stock No.	Part Number	Source Code	Fig. & Index No.	Qty Per Article
R16SPE	310208		3-65	2
	310451		3-13	1
	315132		3-16	1
	315831		3-19	1
	323293		2-7	4
	3305		3-111	1
	4-1716C		3-91	1
	41202-111		3-25	1
	41202-112		3-12	1
	41202-135		3-9	2
	4996-2		3-6	1
	5FF		3-90	1
	5X1		5-3	2
			5-4	
	5X2		5-5	1
	5050		3-23	5
	55H040		3-10	1
G17L3916	6S6DC		3-8	3
			3-14	
	600876-103		3-43	1
	616527		3-39	1
	616531		3-40	1
	616547		3-36	1
	616607		3-7	1
	616630		3-74	1
	616636		3-44	1

Class Code or Stock No.	Part Number	Source Code	Fig. & Index No.	Qty Per Article
	637838-101		7-6	1
	637838-102		7-7	1
	637838-103		7-8	1
	637838-104		7-9	1
R88SPE	661712		3-71	1
R88I 0826-000-000	673147		3-29	1
R43N96555	68NM-62		2-3	4
	687771		3-68	1
	713339		3-20	1
	714117		3-31	1
	714595-224		2-4	4
	723155-009		5-9	4
			5-10	
			5-11	
			5-12	
	726973-5		6-13	1
	736891-60		7-10	1
	736892-10		6-13	1
	736892-11		6-13	1
	744088		2-1	1
R17F1525-49	813900-5		7-4	1
	813900-6		7-3	1
	823957-231		3-30	3
	833801		3-22	1
	837727		3-34	1

SECTION XI
REFERENCE DESIGNATION INDEX

Reference Designation	Fig. & Index No.	Class Code or Stock Number	Part Number
B1	3-31		714117
C1	4-8		196P18396S13
C2	4-1		CP08AIKC333K
C3	4-3	R16C 47149-7406N	196P47496S13
C4	4-2		196P68492S13
C5	4-4		196P39491S13
CR1	3-105		D6686A
I1	3-8	G17L3916	6S6DC
I2	3-8	G17L3916	6S6DC
I3	3-11		AN3137-304
I4	3-14	G17L3916	6S6DC
I5	3-29	R88I 0826-000-000	673147
J1	3-1		3-3102E36-52P
J1	7-1		AN3108A14S-5S
J2	6-12		3-3106E36-52S
J3	6-12		3-3106E36-52S
J4	6-12		3-3106E36-52S
J5	6-12		3-3106E36-52S
J6	6-7	R17P-4426-301-130	AN3106A20-29S
J7	6-1		AN3101A20-29P
J8	6-7	R17P-4426-212	AN3106A20-27S
J9	6-1		AN3101A20-27P
J10	6-7	R17P-4426-110	AN3106A18-1S
J11	6-1		AN3106C18-1P
J12	6-7		AN3101A20-27SX
J13	6-1		AN3106A20-27PX
K1	3-80		1750120
L1	3-97		233976

Reference Designation	Fig. & Index No.	Class Code or Stock Number	Part Number
M1	3-6		4996-2
M2	3-7		616607
R17	5-1		RC42BF102J
R18	5-2	R16JAN	RC42BF751J
R19	5-3		5X1
R20	5-4		5X1
R21	5-5		5X2
R22	5-6	R16JAN	RC42BF103K
R23	5-7	R16JAN	RC20BF513J
R24	5-8	R16JAN	RC20BF513J
R25	5-9		723155-009
R26	5-10		723155-009
R27	5-11		723155-009
R28	5-12		723155-009
R29	5-13		RC42BF103J
R30	5-14		RC42BF202J
R31	5-15		RC20BF163J
R32	3-62	R16JAN	RW306401
R33	3-106	R16R9977-294	RV4ATSD104B
R34	3-28		RV4ATSC153B
S1	3-36		616547-1
S2	3-39		616527
S3	3-40		616531
S4	3-43		600876-103
S5	3-26		JANST4DE
S6	3-44		616636
S7	3-26		JANST4DE
T1	3-71	R88SPE	661712
T2	3-68		687771
TB1	3-91		4-171GC
TB2	3-101		2005
Z1	3-74		616630
Z2	3-53		1750020
Z3	3-59		1750018

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